PB83-163006

Guide to the Identification, Environmental Requirements and Pollution Tolerance of Freshwater Blue-Green Algae (Cyanophyta)

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Prepared for

Environmental Monitoring and Support Lab.
Cincinnati, OH

Jul 82

U.S. Department of Commerce
National Technical Information Service
NTIS

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/3-82-073	2. Applications Guide	3. RECIPIENT'S ACCESSION NO. PB83 163006
4. TITLE AND SUBTITLE Guide to Identification, Environmental Requirements and Pollution Tolerance of Blue-Green Algae (Cyanophyta)		5. REPORT DATE July 1982
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Sam VanLandingham		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Consulting Biologist, 3741 Woodsong Drive, Cincinnati, OH, 45239		10. PROGRAM ELEMENT NO. PE 1BD612
		11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS Environmental Monitoring and Support Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268		13. TYPE OF REPORT AND PERIOD COVERED Handbook
		14. SPONSORING AGENCY CODE EPA-600/06

15. SUPPLEMENTARY NOTES

16. ABSTRACT

An illustrated key to 42 genera and 161 species of Blue-green algae is provided. Information on the environmental requirements and pollution tolerance of these species was compiled from 430 references and summarized on profile sheets. Each profile sheet was divided into nine major categories or spectra (pH, saprobian nutrient, halobion and temperature) which were further subdivided into a total of 70 categories. A concensus of opinion was presented for each major category. It is suggested that this information be employed to evaluate data from plankton and periphyton samples collected for the assessment of water quality.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group

18. DISTRIBUTION STATEMENT RELEASE TO PUBLIC	19. SECURITY CLASS (This Report) UNCLASSIFIED	21. NO. OF PAGES 352
	20. SECURITY CLASS (This page) UNCLASSIFIED	22. PRICE

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

United States
Environmental Protection
Agency

Environmental Monitoring and
Support Laboratory
Cincinnati OH 45268

EPA-600/3-82-073
July 1982

PB83-163006

Research and Development

EPA

Guide to the Identification, Environmental Requirements and Pollution Tolerance of Blue-Green Algae (Cyanophyta)

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

EPA-600/3-82-073
July 1982

GUIDE TO THE IDENTIFICATION, ENVIRONMENTAL REQUIREMENTS AND POLLUTION TOLERANCE OF FRESHWATER BLUE-GREEN ALGAE (CYANOPHYTA)

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FOREWORD

Environmental measurements are required to determine the quality of ambient water, the character of effluents, and the effects of pollutants on aquatic life. The Environmental Monitoring and Support Laboratory - Cincinnati conducts research to develop, evaluate, and promulgate methods to:

* Measure the presence and concentration of physical, chemical and radiological pollutants in water, wastewater, bottom sediments, and solid waste.
* Concentrate, recover, and identify enteric viruses, bacteria, other microorganisms in water.
* Measure the effects of pollution on freshwater, estuarine, and marine organisms, including the phytoplankton, zooplankton, periphyton, macrophyton, macroinvertebrates, and fish.
* Automate the measurement of physical, chemical, and biological quality of water.
* Conduct an Agency-wide quality assurance program to assure standardization and quality control of systems for monitoring water and wastewater.

The effectiveness of measures taken to protect the biological integrity of the Nation's surface waters is dependent upon our knowledge of the environmental requirements and pollution tolerance of aquatic organisms and our understanding of the complex relationships that prevail in aquatic ecosystems. This report is on one of the most important groups of aquatic primary producers -- the blue-green algae. Some species show a wide degree of environmental tolerance while others thrive in an extremely narrow range of conditions such as occur in hot springs. Biomagnification of toxic substances often begins with the blue-green algae which provide the base for many aquatic food chains. A few species are known to produce substances toxic to animals and some have been implicated in human illnesses associated with water distribution systems having open reservoirs.

This report is the sixth in a series of reports in preparation on the environmental requirements and pollution tolerance of aquatic organisms, developed to serve as companions to the EPA Biological Methods Manual. In addition to the environmental profiles, the report also contains taxonomic keys and identification aids, and an extensive bibliography. It will assist biologists in evaluating data collected during studies concerning the effects of toxic substances and other pollutants on the structure of indigenous communities of aquatic organisms.

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ABSTRACT

This report provides an illustrated key to 161 common species of Cyanophyta (blue-green algae) in 42 genera. Information on the environmental requirements and organic-inorganic nutrient tolerance of these species was compiled from 430 references and summarized on "profile sheets" prepared for each species. Each profile sheet was divided into nine major categories or "spectra" (pH, saprobian, nutrient, halobion, and temperature) which were further subdivided into a total of 70 categories. A consensus was presented for each major category or "spectrum."

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ACKNOWLEDGEMENTS

The writer is grateful to Drs. Gary B. Collins and Cornelius I. Weber, Aquatic Biology Section, Biological Methods Branch, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio, for help and encouragement on this project. Permission to reproduce illustrations of the blue-green algae from Dr. G.W. Prescott, Mrs. L.H. Tiffany and the National Research Council of Canada is greatfully acknowledged. The efforts of Mr. Max Anderson, Dr. Rex Lowe, Dr. Eugene Stoermer and Dr. Daniel Wujek who provided much advice and guidance in the review of this manual, are acknowledged.

SECTION 1

INTRODUCTION

This manual is designed especially for investigators of water pollution and water quality surveillance who are interested in applying the highly diagnostic ecological indicative value of information on the blue-green algae on a species level. It is surprising that nearly all comprehensive works on algae are designed for general floristics and identification with little or no real consideration of ecologic value or water quality evaluation. Noteworthy exceptions are Palmer (1959), Fjerdingstad (1965), and Lowe (1974).

In this compilation, little attention was given to purely experimental work and laboratory culturing. The use of culturing and experimental investigations can be quite useful in supplementing a work such as this which is field oriented, however, such investigations are beyond the scope of the present work. On the other hand, laboratory and experimental investigations can be overemphasized in relation to field works.

Scientists and biologists seem to be obsessed with agreement; for this reason the reader is cautioned to look upon the offerings of the species profile sheets as simply another approach to the ever increasing dilemma of the investigation of algal ecology.

DISTRIBUTION OF CYANOPHYTA

Blue-green algae are highly diagnostic and have representatives that run through the entire range of water types from the grossly polluted polysaprobic zones to the most pristine or katharobic waters. Although they are difficult to work with at times as the reader who is already familiar with the keying of Cyanophyta so well knows, the potential range as indicators among the algae is very prominent.

Erroneously, investigators have assumed that it goes without saying that nearly all Cyanophyta are indifferent to pH or are restricted to the alkaline end of the spectrum. This possibly is justified in view of the number of investigations of blue-green algae emphasizing nutrient studies and experiments which are concerned mostly with alkaline waters. However, there are many Cyanophytes which are characteristic of the acid end of the spectrum even though the number of species found naturally in very acidic waters is quite limited. Radzimovsky (1971) demonstrated a lack of inhibition of humic acids in the growth of *Microcystis aeruginosus*. Reports listing such Cyanophytes as *Aphanothece*

pulverulenta at pH 4.6-5.2 (Louis et Olbrechts 1965) are not uncommon. The blue-green algae of acid soils hardly have been investigated sufficiently to make any comprehensive statements about the pH distribution of the blue-green algae in general. By looking at the profile sheet of *Oscillatoria agardhii* one is struck with the fact that even some of the so called "pollution indicating" *Oscillatoria* species have no marked aversion to water with pH below 7.

On the other hand, Brock (1973) confirmed the absence of Cyanophytes at pH below 4 or 5. Investigations and conclusions by such workers as Bennett (1969) and Prescott (1962) have shown that blue-green algae are rare (in general) below pH 7.

There are many commonly occurring species that were left out of the treatment in the profile sheets because of two reasons. First, little is known and recorded in the literature about their saprobic and inorganic nutrient status (examples: *Rhabdoderma lineare, Anabaena variabilis)*. Second, it is known that they have a wide tolerance in the saprobic and/or inorganic nutrient spectra and therefore have no apparent indicative value in water quality appraisal (examples: *Aphanocapse delicatissima, A. elachista)*. It is interesting to note such species as *Chroococcus turgidus* (see profile sheet) which have little or no indicative value with respect to inorganic nutrients or trophic levels (nutrient spectrum). By looking at the profile sheet the reader readily can see that the trophic status of *Chroococcus turgidus* may be debated between apparently indifferent (= eurytrophic) or eutrophic. *C. turdigus* is included in the profile sheets as a good example of a blue green alga that has a wide tolerance in nearly all spectra.

USE OF CYANOPHYTA AS INDICATOR ORGANISMS

A very good system of water quality appraisal can be established by using the blue-green algae and diatoms in relation to their environmental occurrence (as reflected on the present profile sheets and those of Lowe 1974 for the diatoms). This has been pointed out recently by VanLandingham (1976) and has been suggested by many others. The spectral categories, expressed as profile sheets and histograms have proven to be ideal as a standard of ecological comparison for various algae samples (particularly diatoms) from all over the world (Collingsworth et al. 1967; Duthie and Rani 1967; Lowe 1974; Messina-Allen and VanLandingham 1970; and VanLandingham 1968, 1970, and 1976). Use of the profile sheets has the distinct advantage of having the various habitat categories which can be helpful in determining if an alga is absent because of lack of suitable physical habitat or because of adverse water chemistry. Both diatoms and blue-green algae are found the world over in waters and environments of wide variety; however, there are few diatoms but several Cyanophyta that are known to be completely indigenous to polytrophic or polysaprobic waters (enriched greatly with inorganic or organic nutrients). There are blue-green algae that occur characteristically in relatively clean waters. Therefore, the predominance of blue-green algae over the diatoms does not confirm poor water quality unless it is known with certainty what species of blue-green algae and diatoms are present and in what waters they are typically found.

SECTION 2

IDENTIFICATION KEYS

EXPLANATION OF KEYS AND TAXONOMY

The following keys were compiled from the literature and from my own observations and modifications. Since these keys were intended for use mainly in ecological and pollution work, all reference to ecological or habitat conditions was avoided whenever possible. Although references to ecological and habitat characteristics are common in many keys to the various algal groups in the general literature on algae, it is easy to see the difficulties that would arise in using a key if the identification of an algal was based on its habitat requirements such as planktonic vs. nonplanktonic or terrestiral vs. nonterrestrial. Habitat designations are open to much controversy with respect to the various microalgae as one can see by looking at a few of the profile sheets included in the present work. The problems associated with the keying of blue-green algae are plentiful enough without compounding them further by requiring the reader to decide if the alga is endogenous or not endogenous to a given site of collection. The accompanying keys are far from perfect and are handicapped by the attempt to maintain a separation of taxonomic characteristics in species as far as possible to correlate with any potential diagnostic water quality characteristics. In spite of this, these keys may be quite useful in studies of blue-green algae oriented specifically toward water pollution. Several marine genera have been omitted. Such genera as *Aphanocapsa, Calothrix, Lyngbya, Plectonema, Schizothrix, Scytonema, Stigonema, and Symploca* all have a large number of species but apparently not many of these species are important in water quality evaluation; because of this the keys to species of these genera are supplemented with additional keys in the appendix or with detailed descriptions. In some cases where only two or three species of a genus are included in the text, detailed descriptions of each of the few species are presented instead of composing a key. All this was done to minimize the chances of keying incorrectly or confusing a species not found in this work with a species actually found in this work. Most truly cosmopolitan and common species will be found in the text or in the appendix. However, there is always the possibility of keying incorrectly some less common, omitted species to be a species included in this work.

In the key to genera every genus which has taxa which are not found to be important in water quality appraisal but which are very common or cosmopolitan and which are included in the supplemental keys in the appendix are marked ( ).

If some particular choice in any of the keys to species within a genus occurs in both the text key and in the appendix key of that genus, it will be marked (≡) and will be accompanied by a note in the text key to refer to that particular key choice in the appendix key. Example:

≡
5b appendix

Every species of a genus occurring in the text key that has key characteristics that may also be found in the other species in that same genus in the appendix keys are designated (∅).

The taxonomy of the blue-green algae is revised in great detail by Drouet (1968, etc.) and although many (including myself) may feel affinity with his interpretations, it seems more pragmatic at the present time to follow traditional treatments of taxonomy such as that of Geitler (1932) and others. Much taxonomic differentiation that can be applied directly to diagnostic ecological conditions may be lost in using a system such as Drouet's in which many entitles ("taxa") are consolidated. The taxonomic and ecologic problems of the Cyanophyta are numerous and complex. If the reader is interested in a brief review of the current status of problems, see Whitton (1969). The illustrations of the various species presented in the keys are for the user's convenience to facilitate the use of the keys.

ORDERS OF CYANOPHYTA

I. CHROOCOCCALES

Thallus unicellular or forming colonies, sometimes with the cells arranged in rows and forming a pseudofilamentous colony, but never with a trichome organization. Cells coccoid, not differentiated into base and apex, but may be formed into hollow, free-floating colonies which are differentiated into inner and outer poles. No typical endospore formation in special sporangia, reproduction by fission. No exospores.

II. PLEUROCAPSALES

Thallus more or less distinctly filamentous, attached, arrangement very simple and chroococcaceous, or more differentiated, in which case filaments then united into pseudoparenchyma. Hormogonia absent (without trichome and sheath). The cells not adjacent and closely united by means of thin, semi-viable cross-walls or "pit-connections." Heterocysts absent. Frequently with endospores in special sporangia.

III. DERMOCARPALES

Thallus unicellular, attached, typically differentiated into base and apex, without vegetative cell division. Reproduction exclusively by endospores or exospores (gonidia).

IV. HORMOGONALES

Thallus filamentous, reproduction by fission with hormogonal fragmentation (differentiated into trichome and sheath). The trichome cells adjacent and closely united but separated by a thin semi-viable cross-wall, or "pit-connections"; often with heterocysts. Endospores and exospores absent.

KEYS TO GENERA

Order CHROOCOCCALES

1a Cells united into pseudofilamentous thalli .... Entophysalidaceae Geitler 1932 2

1b Cells unicellular or forming colonies, not united into filamentous-like attached thalli . Chroococcaceae Nägeli 1849. 6

2a (1) Membrane distinctly one-sided, producing a conspicuous filamentous structure ..... 3 rare genera*

2b Membrane not distinctly one-sided, without filamentous structure 3

3a (2) Cells with vesicular mucilaginous membrane as in *Gloeocapsa* .. .. *Entophysalis* & *Placoma**

3b Cells without vesicular mucilaginous membrane, either with non-vesicular membrane or without containment in a homogenous matrix 4

4a (3) Stratum, layer, or matrix incrusted with iron, hard and mineralized ..... *Paracapsa**

4b Stratum without iron incrustation, more or less mucilaginous . 5

5a (4) Cells conspicuously bacilliform and in parallel rows which coalesce into crusts ..... *Rhodostichus**

5b Cells more or less spherical, in indistinct, etect or radial rows, forming a mucilaginous stratum ..... *CHLOROGLOEA* Wille 1900

6a (1) Cells single, or a few together forming a generally shapeless colony 7

6b Many cells, united into colonies 15

7a (6) Cells spherical 8

7b Cells elongated 10

* designates genera unimportant in water quality appraisal which are not treated in this work; all taxa unimportant in water quality appraisal are in lower case italics (example: *Pleurocapsaceae*). NOTE: none of these taxa are treated in this work!

8a (7) Cells without mucilaginous envelope ..... *Synechocystis**

8b Cells with firm, distinct mucilaginous envelope 9

9a (8) Envelope vesicular ..... *GLOEOCAPSA* Kützing 1843 †

9b Envelope not vesicular ..... *CHROOCOCCUS* Nägeli 1849 †

10a (7) Cell division transverse 11

10b Cell division longitudinal . *Cyanarcus, Chroostipes & Marssoniella**

11a (10) Cells with firm matrix which is vesicular and mucilaginous ... . *Gloeothece**

11b Cells withouth such envelopes (matrix) 12

12a (11) Cells ellipsoidal to cylindrical, ends rounded 13

12b Cells more or less attenuated at ends to spindle shaped 14

13a (12) Cells single, or occasionally 2-4, straight (or slightly curved) without colonial matrix ..... *Synechococcus**

13b Cells more or less curved, making up colonies of few cells with amorphous colonial matrix ..... *RHABDODERMA* Schmidle 1900 †

14a (12) Cells curved, semicircular to U-shaped, in circular groups of 2-4, forming several small mucilaginous colonies .... *TETRARCUS* Skuja 1932

14b Cells curved differentially, not formed into circular groups . ..... *DACTYLOCOCCOPSIS* Hansgirg 1888 †

15a (6) Cells irregularly disposed 16

15b Cells united in a distinctive way to form regularly shaped colonies 21

16a (15) Thallus not, or only slightly encrusted with calcium compounds 17

16b Thallus not much encrusted with calcium compounds ..... *Lithomyxa**

17a (16) Cells in a communal amorphous mucilaginous matrix; without, or with slightly perceptible membranes (to a colony) which are never distinctly formed one within the other 18

17b Cells with distinct outer membrane 20

18a (17) Cells typically very densely arranged in microscopic, generally planktonic colonies of definite shape .... *MICROCYSTIS* Kützing 1833

18b Cells typically loosely arranged; colonies generally amorphous, generally not planktonic, sometimes very large (for blue-green algae) 19

19a (18) Cells spherical ..... *APHANOCAPSA* Nägeli 1849 †

19b Cells ellipsoidal to cylindrical ..... *APHANOTHECE* Nägeli 1849 †

20a (17) Special outer membranes broadly vesicular, distinctly formed one within the other and separate from one another .... *GLOEOCAPSA* Kützing 1843 †

20b Special outer membranes not broadly vesicular .... *CHROOCOCCUS* Nägeli 1849 †

21a (15) Colonies single-layered, tubular or cubical 22

21b Colony reticular or a hollow sphere 25

22a (21) Colonies single-layered and tabular 23

22b Colonies recularly arranged in rows in 3 directions .... *Eucapsis**

23a (22) Cells within the plane of the colony irregularly disposed 24

23b Cells in regular transverse and longitudinal rows .... *MERISMOPEDIA* Meyen 1839

24a (23) Cells spherical ..... *Coccopedia**

24b Cells extended at right angles to the plane of the colony .... *MICROCROCIS* Richter *in* Hauck et Richter 1892

25a (21) Colony reticular with single row of cells forming the reticulum..... *Cyanodictyon**

25b Colony a hollow sphere (radial in *Marssoniella*) 26

26a (25) Colony with mucilage homogeneous 27

26b Colonial mucilage non-homogeneous 29

27a (26) Cells spherical 28

27b Cells elongated ..... *Lemmermanniella & Marssoniella**

28a (27) Cells disposed peripherally in a single layer .... *COELOSPHAERIUM* Nägeli 1849 †

28b Cells disposed peripherally in 2 or 3 layers ..... *Coelomoron**

29a (26) Cells at ends of mucilaginous stalks .*GOMPHOSPHAERIA* Kützing 1836

29b Cells at ends of mucilaginous "tubes"..... *Woronichinia**

Order PLEUROCAPSALES

1a Thallus not conspicuously filamentous ..... *Pleurocapsaceae*

1b Thallus filamentous (filamentous growth can be obscured at different stages of growth)..... 2

2a (1) Filaments grown together and forming a pseudoparenchyma, or unconnected, then with a creeping basal portion or endolithic ..... Scopulonemataceae Ercegović 1932 4

2b Filaments unconnected and erect 3

3a (2) Filaments multiseriate without endosporangia .. *Siphononemataceae*

3b Filaments uniseriate with apical sporangia ... *Pascherinemataceae*

4a (2) Filaments not composed mainly of membranes 5

4b Filaments mainly composed of pieces of membrane ..... *Solentia**

5a (4) Filaments not entering the substratum or if so, only slightly. 6

5b Filaments mainly or totally penetrating the substratum .... *Myxohyella, Hyella & Dalmatella*

6a (5) Old thallus more or less hemispherical, composed of radial filaments ..... *ONCOBYRSA* C. A. Agardh 1827

6b Thallus composed of more or less, flat crusts 7

7a (6) Old thallus made up of laterally connected filaments 8

7b Old thallus consists of individual or unconnected, erect filaments ..... *Nematoradaisia & Geitleriella**

8a (7) Thallus blastoparenchymatous with "axis" or direction of development of filaments obscure or vague ..... *Xenococcus**

8b Thallus with direction of development of filaments at least partially distinct 9

9a (8) Direction of development of filaments irregular ..... *Onkonema**

9b Direction of development of filaments regular, erect in old thallus 10

10a (9) Membranes gelatinous, basal filaments f thallus not endolithic ..... 4 genera*

10b Membranes usually firm, basal filaments of thallus endolithic ..... *SCOPULONEMA* Ercegović 1930

Order DERMOCARPALES

1a Reproduction by endospores ..... *Cyanidaceae & Dermocarpaceae*

1b Reproduction by exospores, cells (sporangia) in polar position ..... Chamaesiphonaceae Geitler 1925 .. 2

2 (1) Unicellular plants, attached, gregarious or colonial; cell wall (sporangial wall) ruptures at apex when old and remains as a sheath-like membrane (pseudovagina) around the protoplast; reproduction by continuous pinching off of exospores in basipetal succession from the mother cell .... *CHAMAESIPHON* Braun et Grunow *in* Rabenhorst 1865 †

Order HORMOGONALES

1a Trichome with true (dichotomous or lateral) branching, sometimes multiseriate 2

1b Trichome without true branching, but with false branching or unbranched 4

2a (1) Branching typically lateral or subdichotomous with erect filaments, densely compacted ..... *Capsosiraceae*

2b Branching typically dichotomous . *Loriellaceae & Pulvinulariaceae*

2c Branching lateral with an irregular pattern 3

3a (2) With long and short (1-4 cells terminated by apical heterocysts) lateral branches ..... *Nostochopsidaceae*

3b Without both long and short lateral branching .... Stigonemataceae Geitler 1925 11

4a (1) Trichome with "v"-shaped branching ..... *Mastigocladaceae*

4b Trichome without "v"-shaped branching 5

5a (4) Trichome possessing only false branching 6

5b Trichome unbranched 7

5c Trichome with false branching and sometimes with true branching; more mature parts resemble Stigonemataceae .... *Borzinemataceae*

6a (5) Without hairs ..... Scytonemataceae Rabenhorst 1865 18

6b With hairs ..... Rivulariaceae Rabenhorst 1865 25

7a (5) With hairs ..... Rivulariaceae Rabenhorst 1865 25

7b Without hairs 8

8a (7) With heterocysts or akinetes (heterocysts absent only in *Rhaphidiopsis* and *Isocystis* within Nostocaceae) 9

8b Without heterocysts or akinetes 10

9a (8) Sheath firm, filaments apically attenuated ..... *Microchaetaceae*

9b Sheath soft or not firm, filaments typically without polarity ..... Nostocaceae Kirchner 1898 33

10a (8) Trichome longitudinally rolled or crescent-shaped .... *Gomontiellaceae*

10b Trichome erect or not longitudinally rolled .... Oscillatoriaceae Kirchner 1898 40

11a (3) Trichomes of the main filaments and lateral branches identical or slightly different 12

11b Trichomes of the main filaments and lateral branches different 16

12a (11) Filaments mostly biseriate or multiseriate in at least the older parts of the thallus ..... *STIGONEMA* C. A. Agardh 1824 †

12b Filaments uniseriate 13

13a (12) Filaments tortulose ..... *Sommeriella**

13b Filaments cylindrical 14

14a (13) With heterocysts 15

14b Without heterocysts ..... *Albrightia**

15a (14) With hormocysts ..... *Westiella**

15b Without hormocysts ..... *HAPALOSIPHON* Nägeli 1849 †

16a (11) Filaments unconnected 17

16b Filaments combined into bundles ..... *Thalpophilia & Leptopogon**

17a (16) Thallus with multiseriate filaments which are creeping or tortulose, with heterocysts ..... *FISCHERELLA* Gomont 1895

17b Thallus with erect filaments, without heterocysts .. *Doliocatella**

18a (6) Heterocysts present 19

18b Heterocysts absent ..... *PLECTONEMA* Thuret 1875 †

19a (18) Usually more than one trichome in a sheath 20

19b Usually only one trichome within a sheath (occasionally more than one in *SCYTONEMA*, *TOLYPOTHRIX* and *Petalonema*) 21

20a (19) Filaments vaguely parallel or interlaced, making the thallus more or less random in shape; heterocyst usually intercalary; branches sparse ..... *Hydrocoryne**

20b Filaments greatly branched; heterocysts mainly basal-terminal ..... *DESMONEMA* Berkeley et Thwaites 1849

21a (19) Trichomes not attenuated apically, or if so, only faintly 22

21b Trichomes with conspicuously attenuated apices .. *Scytonematopsis**

22a (20) False branches usually geminate 24

22b False branches usually isolated or singular, originating from basal-terminal heterocysts 23

23a (22) Filaments flexible ..... *TOLYPOTHRIX* Kützing 1843 †

23b Filaments brittle, cells usually short and discoid .... *Hassallia**

24a (22) Sheaths thin or only moderately thick .... *SCYTONEMA* C. A. Agardh 1824 †

24b Sheaths very thick with conspicuous divergent lamination .... *Petalonema**

25a (6,7) Heterocysts lacking 26

25b Heterocysts present 27

26a (25) Base of trichome not associated with aggregation of cells and basal "disc" ..... *HOMOEOTHRIX* Kirchner 1898

26b Trichome arises from multicellular aggregation of cells forming basal disc ..... *AMPHITHRIX* Kützing 1843

27a (25) Filaments in a common matrix, generally forming thalli that are globular or more or less spherical 28

27b Filaments not in a common matrix 31

28a (27) Sheaths broad and bladder-like ..... *Sacconema**

28b Sheaths not broad and bladdery or sack-like 29

29a (28) With akinetes ..... *GLOEOTRICHIA* J. Agardh 1842

29 Without akinetes 30

30a (29) Thallus more or less hemispherical; false branches profuse ... . *RIVULARIA* C. A. Agardh 1824 †

30b Thallus flat; false branches uncommon ..... *Isactis**

31a (27) False branches normally single with a single trichome in each sheath ..... *CALOTHRIX* C. A. Agardh 1824 †

31b False branches in tufts with a common sheath at the base of the false branches 32

32a (31) Only a few false branches together ... *DICHOTHRIX* Zanardini 1858 †

32b Many false branches together ..... *Gardnerula**

33a (9) Heterocysts absent ..... *Isocystis & Rhapidiopsis**

33b Heterocysts present 34

34a (33) With terminal heterocysts in fully grown trichomes (but beginning as a pair of intercalary heterocysts in *ANABAENOPSIS*) 35

34b Heterocysts typically intercalary 36

35a (34) Akinetes not adjacent to the heterocysts .... *ANABAENOPSIS* Miller 1923 †

35b Akinetes adjacent to heterocysts .. *CYLINDROSPERMUM* Kützing 1843 †

36a (34) Elongated, colorless cells at the ends of the trichomes .... *APHANIZOMENON* Morren 1838

36b Cells all identical 37

37a (36) Trichomes solitary, or united into amorphous, soft masses or coatings 38

37b Trichomes in mucilaginous colonies which are more or less firm and have a definite form 39

38a (37) Cells elongated or not very short, generally discoid, barrel-shaped or elongated ..... *ANABAENA* Bory 1822 †

38b Cells very short, discoid from appears much compressed .... *NODULARIA* Mertens *in* Jürgens 1822

39a (37) Trichomes twisted usually at random but sometimes in a radial pattern; thallus is not hollow or tube like . *NOSTOC* Vaucher 1803 †

39b Trichomes nearly parallel; thallus hollow and tube-like . *Wollea**

40a (10) Normally with several trichomes in a sheath; sheath closed at apex after the emergence of the hormogonia 41

40b Trichomes without a sheath or with a solitary trichome in a sheath; sheath remaining open apically after the emergence of hormogonia 47

41a (40) Many trichomes in a sheath, closely packed together 42

41b Few trichomes in a sheath, loosely arranged 43

42a (41) Sheaths soft or slimy, filaments stuck together; stratum with tuft-like appearance ..... *MICROCOLEUS* Desmazières 1823 †

42b Sheaths more or less firm; filaments not stuck together, stratum without tuft-like appearance ..... *Sirocoleum**

43a (41) Filaments unbranched ..... *Polychlamydum**

43b Filaments branched 44

44a (43) Sheath very delicate, in some cases apparently dissolved; few trichomes in a sheath ..... *Dasygloea**

44b Sheath and trichomes otherwise 45

45a (44) Sheaths slimy or soft, apical cell usually with a calyptra ... . *Hydrocoleum**

45b Sheaths fairly firm; calyptra absent from apical cell 46

46a (45) Several trichomes in each sheath; filaments profusely branched ..... *SCHIZOTHRIX* Kützing 1843 †

46b Few trichomes or a single trichome in a sheath; filaments sparsely branched ..... *Porphyrosiphon**

47a (40) Trichomes (at least partially) with a recognizable sheath; sheaths firm 48

47b Trichomes without a sheath (or with an amorphous or soft, mucilaginous matrix) 53

48a (47) Sheaths firm 49

48b Sheaths soft or more or less slimy 50

49a (48) Filaments not in bundles ..... *LYNGBYA* C. A. Agardh 1824 †

49b Filaments (generally erect) in bundles .... *SYMPLOCA* Kützing 1843 †

50a (48) Filaments single ..... *Proterendothrix & Katagnymene**

50b Filaments united into stratum with sheaths stuck together 51

51a (50) Stratum free-floating ..... *Pelagothrix & Hallarachne**

51b Stratum attached 52

52a (51) Stratum hoof-shaped ..... *Cyanohydnum**

52b Stratum otherwise, irregular, usually membranous .....
..... *PHORMIDIUM* Kützing 1843 †

53a (47) Trichomes more or less straight, not regularly twisted 54

53b Trichomes long, regularly and spirally coiled 57

54a (53) Trichomes very short with very few cells ..... *Borzia**

54b Trichomes not very short, with many cells 55

55a (54) Trichomes united into free-floating bundles ..... *Trichodesmium**

55b Trichomes not united into free-floating bundles 56

56a (55) Walls without constricted appearance at contact between cells of trichome ..... *OSCILLATORIA* Vaucher 1803 †

56b Walls with constricted appearance at contact between cells of trichome ..... *PSEUDANABAENA* Lauterborn 1914-1917

57a (53) Trichomes not flexible, without movement as in *Spirochaeta* ...
..... *SPIRULINA* Turpin 1827 †

57b Trichomes flexible, movement as in *Spirochaete* ..... *Glaucospira**

KEYS TO SPECIES

AMPHITHRIX Kützing 1843

Amphithrix janthina was the only species in this genus judged worthy of mention in relation to water quality. It occupies a broad range of the less organically enriched part of the saprobian spectrum and is diagnostically periphytic.

Amphithrix janthina Bornet *et* Flahault 1885 (=*Homoeothrix janthina*). Cells almost as long as wide, 1.5-2.5 μ wide; trichomes tapering to a hair-like point; sheaths mostly thin and colorless; hormogonia about 20 μ long. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 68, fig. 1; Prescott 1964, fig. 322; Prescott 1962, pl. 131, fig. 9; Tiffany and Britton 1952, pl. 106, fig. 1175; Smith 1950, fig. 519; Geitler 1942, fig. 122B; Geitler 1932, fig. 358; Tilden 1910, pl. 16, fig. 3 PL. 1, FIG. 1

ANABAENA Bory 1822

This genus has many species which are considerably differentiated in their ecological ranges. However, it does have some good water quality indicators. *Anabaena constricta* is one of the few truly saprobiontic forms of blue-green algae outside of the genera *Oscillatoria* and *Phormidium*. Contrary to common belief, such genera as *Anabaena* are not necessarily typical of polluted waters; such species as *A. inaequalis* and *A. oscillarioides* are not typical of polluted waters. VanLandingham (1976) pointed out that in nearly every case the species must be determined to determine water quality; this is especially true of a genus such as *Anabaena*.

KEY TO SPECIES

1a Heterocysts very rare; cells of trichome strongly constricted from each other ..... *A. CONSTRICTA*

1b Heterocysts not normally rare; cells of trichome with normal appearance 2

≡2a (1) Mature resting spore (akinete) spherical or ellipsoidal (not cylindrical) 3
3a appendix

≡2b Mature resting spore cylindrical 4
3b appendix

3a (2) Trichome not spiraled ..... *A. PLANCTONICA* I

3b Trichome forming spirals ..... *A. SPIROIDES* I

4a (2) Akinete acuminated at ends, hexagonally rounded in optical cross section ..... *A. MACROSPORA* I

4b Akinete rounded at the ends 5

≡5a (4) Akinetes near or adjacent to the heterocysts 6
2a,5a appendix

≡5b Akinetes with indefinite position 8
2b,5b appendix

6a (5) Akinetes (spores) elongate-ovate with lateral margins convex ... . *A. TORULOSA* I

6b Akinetes cylindrical with lateral margins parallel..... 7

7a (6) Cells 4-6 μ wide, 7-9 μ long, akinetes 20-40 μ long and 8-10 μ wide, gelatinous layer pale brown ..... *A. OSCILLARIOIDES* I

7b Cells 3-4 μ wide, 3-5 μ long, akinetes 16-30 μ long and 5 μ wide, gelatinous layer colorless ..... *A. CYLINDRICA* I

8a (6) Trichome more or less clearly circular or spirally bent 9

8b Trichome straight or irregularly bent ..... *A. INAEQUALIS* I

9a (8) Trichomes 4-8 μ in diameter, spores 7-13 μ in diameter .... *A. FLOSAQUAE* I

9b Trichomes 8-10 μ in diameter, spores 16-18 μ in diameter .... *A. CIRCINALIS* I

ILLUSTRATIONS

A. CIRCINALIS Rabenhorst 1852. Whitford and Schumacher 1973, pl. 61, fig. 92; Taft and Taft 1971, fig. 628; Prescott 1962, pl. 116, fig. 1-2; Geitler 1960, fig. 3d, 21b; Fott 1959, fig. 13; Desikachary 1959, pl. 77, fig. 2; Van Meel 1954, pl. 71, fig. 13, pl. 73, fig. 3; Tiffany and Britton 1952, pl. 98, fig. 1129, 1130; Smith 1950, fig.

448B, 498A; Huber-Pestalozzi 1938, fig. 135; Geitler 1932, fig. 572; Smith 1920, pl. 9, fig. 4-5; Tilden 1910, pl. 9, fig. 15. PL. 1, FIG. 2

A. CONSTRICTA Geitler 1925a. Desikachary 1959, pl. 71, fig. 1; Palmer 1959, fig. 13, and pl. 3; Geitler 1932, fig. 555. PL. 1, FIG. 3

A. CYLINDRICA Lemmermann 1896. Hollerbakh et Schtina 1969, fig. 40, no. 2; Proschkina-Lavrenko et Makarova 1968, fig. 11, no. 1-4; Huber-Pestalozzi 1938, fig. 121; Frémy 1934, pl. 61, fig. 6; Geitler 1932, fig. 565. PL. 1, FIG. 4

A. FLOSAQUAE De Brébisson *in* De Brébisson *et* Godey 1836. Whitford and Schumacher 1973, pl. 61, fig. 97; Taft and Taft 1971, fig. 629; Proschkina-Lavrenko et Makarova 1968, fig. 23, no. 3; Prescott 1962, pl. 116, fig. 7; Lund 1962, fig. 67, 68; Palmer 1959, pl. 2; Tiffany and Britton 1952, pl. 97, fig. 1127; Nygaard 1945, pl. 1, fig. 8; Geitler 1942, fig. 129d-e; Geitler 1932, fig. 571 a-b; Frémy 1930, fig. 297; Smith 1920, pl. 10, fig. 2-4. PL. 1, FIG. 5

A. INAEQUALIS Bornet et Flahault 1888. (= *Anabaena laxa*). Whitford and Schumacher 1973, pl. 61, fig. 98; Prescott 1962, pl. 116, fig. 9-10; Tiffany and Britton 1952, pl. 99, fig. 1136; Geitler 1942, fig. 129a; Huber-Pestalozzi 1938, fig. 148; Geitler 1932, fig. 578; Tilden 1910, pl. 9, fig. 16. PL. 1, FIG. 6.

A. MACROSPORA Klebahn 1895. Prescott 1962, pl. 117, fig. 4-6; Huber-Pestalozzi 1938, fig. 120; Geitler 1932, fig. 564 a-b. PL. 1, FIG. 7

A. OSCILLARIOIDES Bory 1822. Whitford and Schumacher 1973, pl. 61, fig. 100; Hollerbakh et Schtina 1969, fig. 40, no. 4; Prescott 1962, pl. 117, fig. 8-10; Desikachary 1959, pl. 71, fig. 7; Tiffany and Britton 1952, pl. 99, fig. 1137; Smith 1950, fig. 451A; Frémy 1934, pl. 61, fig. 5; Geitler 1932, fig. 567e; Frémy 1930, fig. 307; Tilden 1910, pl. 9, fig. 20. PL. 1, FIG. 8

A. PLANCTONICA Brunnthaler 1903. Taft and Taft 1971, fig. 632; Prescott 1962, pl. 118, fig. 1-3; Palmer 1959, pl. 1; Skuja 1956, pl. 7, fig.

10-12; Mabille 1956, fig. 6-8; Tiffany and Britton 1952, pl. 98, fig. 1128; Nygaard 1945, fig. 9; Huber-Pestalozzi 1938, fig. 117, 118; Geitler 1932, fig. 562; Smith 1920, pl. 8, fig. 2. PL. 1, FIG. 9

A. SPIROIDES Klebahn 1895. Whitford and Schumacher 1973, pl. 60, fig. 91; Lund 1962, fig. 63; Desikachary 1959, pl. 71, fig. 9; Tiffany and Britton 1952, pl. 98, fig. 1133-1135; Smith 1950, fig. 498B; Nygaard 1945, fig. 7; Huber-Pestalozzi 1938, fig. 119a; Frémy 1930, fig. 296. PL. 1, FIG. 10

A. TORULOSA Lagerheim 1883. Whitford and Schumacher 1973, pl. 61, fig. 94; Desikachary 1959, pl. 71, fig. 6; Huber-Pestalozzi 1938, fig. 126; Frémy 1934, pl. 62, fig. 1; Geitler 1932, fig. 567d; Frémy 1930, fig. 306; Tilden 1910, pl. 9, fig. 19. PL. 1, FIG. 11

ANABAENOPSIS Miller 1923

Little of indicative value concerning water quality is known about this genus.

Anabaenopsis tanganyikae Woloszyńska *et* Miller *in* Miller 1923. Cells mostly elongated and cylindrical, about 2-3 μ wide and 3.5-15 μ long; heterocysts at various positions along trichome, but characteristically found also at terminal position; spores subspherical to ellipsoidal, 6-12 μ long. ILLUSTRATIONS - Guarrera *et al.* 1972, pl. 3, fig. 7; Proschkina-Lavrenko *et* Makarova 1968, fig. 25; Desikachary 1959, pl. 63, fig. 4, 8; Van Meel 1954, pl. 72, fig. 11-14; Huber-Pestalozzi 1938, fig. 80; Geitler 1932, fig. 516b; Frémy 1930, fig. 310. PL. 1; FIG. 12

APHANIZOMENON Morren 1838

Although this is a small genus, one exceptionally good indicator species is known, *Aphanizomenon flosaquae*. This species is one of the few truely diagnostic eplanktonic forms and has a strong affinity for the β mesosaprobic range of the saprobian spectrum. It also is considered to be diagnostic of eutrophic conditions and has a wide enough salt tolerance to be useful in pollution studies in brackish estuarine-marine coastal waters.

Aphanizomenon flosaquae Ralfs 1850. (= *Aphanizomenon holsaticum, Aphanizomenon gracile)*. Trichomes parallel, papering toward both ends; cells 5-6 μ in diameter and about 8-13 μ long; heterocysts elongated or cylindrical, mostly in the mid portions of the trichome, 6-8 μ in diameter 12-20 μ long. Spores (akinetes) elongated or cylindrical, 6.5-8 μ in diameter, about 60-75 μ long. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 62, fig. 11, 11a; Proschkina-Lavrenko et Makarova 1968, fig. 28, no. 1; Prescott 1964, fig. 354; Prescott 1962, pl. 122, fig. 6-8; Desikachary 1959, pl. 107, fig. 6; Fott 1959, fig. 13_2; Palmer 1959, pl. 1; Tiffany and Britton 1952, pl. 99, fig. 1143, 1144; Smith 1950, fig. 503; Nygaard 1945, pl. 1, fig. 13; Geitler 1942, fig. 128; Huber-Pestalozzi 1938, fig. 90; Frémy 1934, pl. 62, fig. 2; Geitler 1932, fig. 524; Smith 1920, pl. 11, fig. 2-4; Tilden 1910, pl. 10, fig. 1. PL. 2, FIG. 1

APHANOCAPSA Nägeli 1849

This is a fairly large genus with respect to number of species and although it appears to be almost barren of good water quality indicator species, further investigation may reveal some consistent water quality tendencies in more of the many species. Evidence is good that such common species as *Aphanocapsa elachista* and *A. delicatissima* are eurytrophic (indifferent) and poor indicators of inorganic nutrient conditions (Järnefelt 1952). It is interesting to note that most species in this genus tend to occur in soft water and acid habitats (Prescott 1962). All of the three species below have a good affinity for relatively unenriched waters.

DESCRIPTION OF SPECIES

Olive-, yellow- or blue-green colored (occasionally light violet or colorless) thallus with no definite shape, gelatinous and dispersed with colorless mucilage; cells 2.5-4 μ in diameter, spherical, solitary or in pairs with a pale yellowish or blue-green color ..... *A. MONTANA*

Blue-green thallus which is gelatinous and tuberculate or globose; cells spherical and granular, 3.2-5 μ in diameter, singular or in pairs, with a pale blue-green color, loosely and regularly dispersed within profuse mucilage; "sheaths" of individual cells are inconspicuous or indistinct ..... *A. PULCHRA*

Amorphous, globular, tubular or spherical colony (thallus); cells globose, granular, 5-6 μ in diameter, solitary with a bright blue-green color, scattered or dispersed in a colonial mucilage ..... *A. RIVULARIS*

ILLUSTRATIONS

A. MONTANA Cramer *in* Wartmann et Schenk 1862. (= *Anacystis montana*). Golubić 1967, Abb. 4, Fig. 6; Palmer 1959, pl. 3; Desikachary 1959, pl. 20, fig. 8. PL. 2, FIG. 2

A. PULCHRA Rabenhorst 1865. Whitford and Schumacher 1973, pl. 60, fig. 23; Taft and Taft 1971, fig. 570; Cocke 1967, fig. 9; Prescott 1962, pl. 101, fig. 14; Desikachary 1959, pl. 21, fig. 2; Van Meel 1954, pl. 70, fig. 2; Smith 1950, fig. 456; Huber-Pestalozzi 1938, fig. 13; Frémy 1934, pl. 2, fig. 3; Geitler 1932, fig. 69g; Frémy 1930, fig. 22; Smith 1920, pl. 2, fig. 9. PL. 2, FIG. 3

A. RIVULARIS Rabenhorst 1865. (= *Aphanocapsa biformis, Aphanothece minuta*). Prescott 1962, pl. 101, fig. 17; Huber-Pestalozzi 1938, fig. 15; Smith 1920, pl. 3, fig. 2; Tilden 1910, pl. 2, fig. 8, 9. PL. 2, FIG. 4

APHANOTHECE Nägeli 1849

The species listed below tend to be planktonic and tend to be absent from organic enrichment; however, they occur under a wide variety of inorganic nutrient conditions.

KEY TO SPECIES

1a Colonies usually clathrate, irregularly expanded with large perforations; cells ellipsoidal or cylindrical 2

1b Colonies not clathrate; globular or amorphous cells 3

2a (1) Cells not associated with pseudovacuoles (gas vacuoles) ..... *A. CLATHRATA*

2b Cells associated with pseudovacuoles (gas vacuoles) ..... *A. PULVERULENTA*

3a (2) Colonies globular or hemispherical, free floating or attached . 4

3b Colonies amorphous, gelatinous masses, becoming free floating . ..... *A. CASTAGNEI*

4a (3) Colonies small, 50-150 μ across; numerous groups of cells in more or less long rows, which under certain circumstances can become reticulate in pattern ..... *A. NOSTOCOPSIS*

4b Colonies large, sometimes over 1 cm. large; cells not arranced in more or less long rows and not tending toward a reticulate pattern ..... *A. STAGNINA*

ILLUSTRATIONS

A. CASTAGNEI Rabenhorst 1865. (= *Anacystis marginata*). Whitford and Schumacher 1973, pl. 60, fig. 39; Guarrera *et al.* 1972, pl. 4, fig. 11; Hollerbakh et Schtina 1969, fig. 5, no . 2; Prescott 1964, fig. 386; Prescott 1962, pl. 105, fig. 5, 6; Desikachary 1959, pl. 21, fig. 8; Frémy 1934, pl. 3, fig. 8; Tilden 1910, pl. 2, fig. 13. PL. 2, FIG. 5

A. CLATHRATA G. S. West *in* West et West 1906. Taft and Taft 1971, fig. 571; Proschkina-Lavrenko et Makarova 1968, fig. 15, no. 4; Lund 1962, fig. 61; Prescott 1962, pl. 104, fig. 6, 7; Desikachary 1959, pl. 22, fig. 2; Van Meel 1954, pl. 70, fig. 4; Smith 1950, fig. 466B; Huber-Pestalozzi 1938, fig. 18; Geitler 1932, fig. 74a; Smith 1920, pl. 6, fig. 3. PL. 2, FIG. 6

A. NOSTOCOPSIS Skuja 1932. Huber-Pestalozzi 1938, fig. 22A. PL. 2, FIG. 7

A. PULVERULENTA Bachmann 1921. Huber-Pestalozzi 1938, fig. 17; Geitler 1932, fig. 73. PL. 2, FIG. 8

A. STAGNINA Braun *in* Rabenhorst 1854-1869. (= *Anacystis rupestris, Aphanothece prasina, Coccochloris stagnina*). Whitford and Schumacher 1973, pl. 60, fig. 43; Guarrera *et al.* 1972, pl. 4, fig. 10 a-b; Prescott 1968, pl. 10, fig. 131; Proschkina-Lavrenko et Makarova 1968, fig. 15, no. 1; Halperin 1964, pl. 1, fig. 1-3; Prescott 1962, pl. 103, fig. 14-16; Desikachary 1959, pl. 21, fig. 10; Fott 1959, fig. 6_3; Palmer 1959, pl. 4; Van Meel 1954, pl. 70, fig. 5; Smith 1950, fig. 466A; Huber-Pestalozzi 1938, fig. 16;

Frémy 1934, pl. 3, fig. 3; Geitler 1932, fig. 72; Frémy 1930, fig. 26; Smith 1920, pl. 6, fig. 2. PL. 2, FIG. 9

CALOTHRIX C. A. Agardh 1824

All of the species in this work are found in the less organically rich part of the saprobian spectrum and are characteristically attached or periphytic. Fjerdingstad (1965a) indicated that various *Calothrix* species are found in the katharobic zone.

DESCRIPTION OF SPECIES

Thallus caespitose, blue-green or brownish; trichomes straight, parallel, swollen at base and tapering to a hair at the apex; sheath thin and colorless; vegetative cells 6-8 μ broad, shorter than broad or as broad as long, constricted at the cross walls; heterocysts basal and hemispherical ..... *C. BRAUNII*

Filaments dark green, pale purple to violet, 2000-3000 μ long, 12-25 μ wide, not swollen or weakly swollen at the base; sheath not laminated and soft, colorless to pale yellow-green; trichome 10-18 μ broad, tapering to a hair at the apex; vegetative cells very short (about 1/3 to 1/5 as broad as long); heterocyst basal ..... *C. CONFERVICOLA*

Filaments solitary, seldom gregareous, often in the mucilage of other algae (such as *Coleochaete* or *Batrachospermum*), 2000-3000 μ long, 10-15 μ broad, bent at the base and inflated, tapering into a long apical hair; vegetative cells 5-11 μ in diameter, discoid and shorter than broad; heterocysts basal, hemispherical and single or double, 9-10 μ in diameter and smaller than the basal cell of the trichome ..... *C. FUSCA*

Thallus brownish or dark black and calcareous with filaments solitary or gregareous which taper from the base (which is appressed to the substrate) into a hair (about 1 μ broad) at the apex; filaments much twisted and contorted with many branches, about 250-1000 μ long, 10-12 μ broad; sheath usually not lamellate, becoming yellowish brown with age; vegetative cells blue-green, shorter than broad, 5-10 μ broad, 2-3 μ long; heterocysts usually basal (rarely intercalary), hemispherical or quadrate-globose,

slightly broader than cells, 6-10 μ broad ..... *C. PARIETINA*

KEY TO SPECIES

1a Filaments 12-25 μ broad, marine ..... *C. CONFERVICOLA*

1b Filaments usually less than 12 μ broad, non-marine 2

2a (1) Filaments enlarged at the basal portion ..... *C. FUSCA*

2b Filaments not enlarged at basal portion 3

3a (2) Sheath brown ..... *C. PARIETINA*

3b Sheath colorless ..... *C. BRAUNII*

ILLUSTRATIONS

C. BRAUNII Bornet *et* Flahault 1886. Whitford and Schumacher 1973, pl. 68, fig. 3; Prescott 1964, fig. 323c; Prescott 1962, pl. 131, fig. 12; Desikachary 1959, pl. 114, fig. 3; Thompson 1938, pl. 2, fig. 9; Geitler 1932, fig. 381; Fremy 1930, fig. 230; Tilden 1910, pl. 18, fig. 11. PL. 2, FIG. 10

C. CONFERVICOLA C. A. Agardh 1824. Geitler 1960, fig. 68; Fan 1956, fig. 6; Geitler 1942, fig. 120; Geitler 1932, fig. 376; Tilden 1910, pl. 17, fig. 10, 11. PL. 2, FIG. 11

C. FUSCA Bornet *et* Flahault 1886. Whitford and Schumacher 1973, pl. 68, fig. 7; Taft and Taft 1971, fig. 674; Prescott 1962, pl. 132, fig. 4, 5; Desikachary 1959, pl. 107, fig. 10; Smith 1950, fig. 520; Geitler 1932, fig. 384; Tilden 1910, pl. 17, fig. 10, 11. PL. 2, FIG. 12

C. PARIETINA Thuret 1875. Whitford and Schumacher 1973, pl. 68, fig. 9; Prescott 1962, pl. 132, fig. 6; Palmer 1959, pl. 4, fig. 34; Desikachary 1959, pl. 108, fig. 6-8; Fan 1956, fig. 1; Tiffany and Britton 1952, pl. 107, fig. 1178, 1179; Geitler 1932, fig. 380; Tilden 1910, pl. 18, fig. 12. PL. 3, FIG. 1

CHAMAESIPHON Braun *et* Grunow *in* Rabenhorst 1865

This is a very important ecologically indicative genus, not only because

of its high frequency in the portion of the saprobian spectrum that is less rich in organic nutrients, but because of its characteristic non-planktonic nature associated with *in situ* development (which can be interpreted as indigenous to the specified conditions under consideration). It ranks behind *Oscillatoria*, *Phormidium*, and *Nostoc* with respect to the number of ecologically significant species included in this survey.

KEY TO SPECIES

1a	Gonidia mostly joined with the parent plant by means of budding.	5
1b	Entire contents of the cell disposed into many gonidia concomitantly	*C. CONFERVICOLA*
1c	Gonidia few in number, successively constricted away from apex of the protoplast	2
2a (1)	Sporangium globular to ellipsoidal	*C. SUBGLOBOSUM*
2b	Sporangium club shaped	3
3a (2)	Pseudovagina colorless	*C. INCRUSTANS*
3b	Pseudovagina colored	4
4a (3)	Pseudovagina and matrix or mass ("layer") rust red	*C. POLONICUS*
4b	Pseudovagina and matrix or mass ("layer") brown to almost black	*C. FUSCUS*
5a (1)	Pseudovagina colored	6
5b	Pseudovagina colorless	7
6a (5)	Pseudovagina and matrix or mass ("layer") rust red	*C. POLONICUS*
6b	Pseudovagina and matrix or mass ("layer") brown to almost black	*C. FUSCUS*
7a (5)	Sporangia up to 5 μ broad	*C. REGULARIS*
7b	Sporangia broader than 5 μ	*C. POLYMORPHUS*

ILLUSTRATIONS

C. CONFERVICOLA Braun *in* Rabenhorst 1865. Prescott 1962, pl. 108, fig. 4; Geitler 1942, fig. 61H; Geitler 1932, fig. 243a; Wolle 1887, pl. 100, fig. 1, 2. PL. 3, FIG. 2

C. FUSCUS Hansgirg 1892. (= *Chamaesiphon geitleri*). Friedrich 1973, pl. 5, fig. c-e; Geitler 1942, fig. 72d,e; Geitler 1932, fig. 257, 258; Hansgirg 1892, fig. 37. PL. 3, FIG. 3

C. INCRUSTANS Grunow *in* Rabenhorst 1865. Whitford and Schumacher 1973, pl. 60, fig. 64; Prescott 1968, pl. 11, fig. 138; Prescott 1962, pl. 108, fig. 7, 8; Smith 1950, fig. 484; Geitler 1932, fig. 253; Wolle 1887, pl. 200, fig. 3. PL. 3, FIG. 4

C. POLONICUS Hansgirg 1892. Geitler 1942, fig. 72b, c; Geitler 1932, fig. 255, 256. PL. 3, FIG. 5.

C. POLYMORPHUS Geitler 1925b. Geitler 1960, fig. 49a; Fott 1959, fig. 4d; Geitler 1932, fig. 264. PL. 3, FIG. 6.

C. REGULARIS Geitler 1932. (= *Chamaesiphonopsis regularis, Xenococcus britannica, Oncobyrsa britannica, Chamaesiphon "irregularis"*). Whitford and Schumacher 1973, pl. 60, fig. 65; Geitler 1932, fig. 262; Fritsch 1929, fig. 3 A-I; West and Fritsch 1927, fig. 189 C, F-I. PL. 3, FIG. 7

C. SUBGLOBOSUS Lemmermann 1910. Geitler 1932, fig. 247. PL. 3, FIG. 8

CHLOROGLOEA Wille 1900

The only species encountered in this study with any real potential as a good indicator of organic nutrient conditions was *Chlorogloea microcystoides*. This species has the added advantage of being a characteristic periphytic form.

Chlorogloea microcystoides Geitler 1925b. Cells 2-4 μ in diameter, blue green, olive green or yellowish; spherical or ellipsoidal in very compact polygonal pattern in variable rows. Colonial mucilage mostly colorless, but may be yellowish or brownish in peripheral area. Nannocytes originate in larger cells by repeated divisions, 1.5-2 μ in diameter. ILLUSTRATIONS - Desikachary 1959, pl. 9, fig. 8; Geitler 1942, fig. 47; Geitler 1932, fig. 155; Geitler 1925b, fig. U. PL. 3, FIG. 9

CHROOCOCCUS Nägeli 1849

The species of this genus are either so widely tolerant of organic enrichment that they are of little indicative value (such as *Chroococcus turgidus*), or they display tolerance for high inorganic nutrients (*Chroococcus planctonicus*) or low organic nutrients (*Chroococcus minutus*). All species in this study are prominent in the plankton. *Chroococcus prescottii* may have value as an indicator of acidic waters (Prescott 1962), however, too little can be gleaned from the literature at the present to access its value in indicating nutrient conditions.

KEY TO SPECIES

1a Cells 13-70 μ in diameter ..... *C. TURGIDUS*

1b Cells 1.5-10 μ in diameter 2

2a (1) Colonial mucilage or sheaths of individual cells lamellate .... *C. VARIUS*

2b Colonial mucilage or sheaths of individual cells not lamellate . 3

3a (2) Cells without conspicuous gas vacuoles (*C. minutus* may be finely granular) 4

3b Cells with conspicuous gas vacuoles ..... *C. PLANCTONICUS*

4a (3) Cells 3-4.5 μ in diameter, in clumps separated from each other by a conspicuous distance ..... *C. DISPERSUS*

4b Cells over 4 μ in diameter and in close proximity to each other 5

5a (4) Cells in colonies of 4-8-16 or more ..... *C. LIMNETICUS*

5b Cells solitary or in groups of 2 up to 4 (very rarely over 4); may be finely granulate (NOTE: *C. minutus* is highly variable when considered *sensu lato*, therefore it can be presented in a key only with great difficulty) ..... *C. MINUTUS*

ILLUSTRATIONS

C. DISPERSUS Lemmermann 1904. Whitford and Schumacher 1973, pl. 60, fig. 1; Taft and Taft 1971, fig. 574; Prescott 1962, pl. 100, fig. 7; Van Meel 1954, pl. 71, fig. 6; Huber-Pestalozzi 1938, fig. 32; Geitler 1932, fig. 113d; Smith 1920, pl. 1, fig. 2. PL. 4, FIG. 1

C. LIMNETICUS Lemmermann 1898b. Whitford and Schumacher 1973, pl. 60, fig. 3; Taft and Taft 1971, fig. 576; Prescott 1964, fig. 375c; Prescott

1962, pl. 100, fig. 4, 5; Desikachary 1959, pl. 26, fig. 2; Van Meel 1954, pl. 71, fig. 1; Tiffany and Britton 1952, pl. 91, fig. 1050; Smith 1950, fig. 453B; Nygaard 1945, pl. 1, fig. 1; Huber-Pestalozzi 1938, fig. 33; Thompson 1938, pl. 1, fig. 3; Frémy 1934, pl. 4, fig. 3; Geitler 1932, fig. 113a; Frémy 1930, fig. 44; Smith 1920, pl. 1, fig. 4; Tilden 1910, pl. 1, fig. 8. PL. 4, FIG. 2

C. MINUTUS Nägeli 1849. Whitford and Schumacher 1973, pl. 6, fig. 5; Taft and Taft 1971, fig. 579; Prescott 1962, pl. 100, fig. 9; Desikachary 1959, pl. 24, fig. 4, pl. 26, fig. 415; Van Meel 1954, pl. 70, fig. 8; Huber-Pestalozzi 1938, fig. 30; Frémy 1934, pl. 4, fig. 6; Geitler 1932, fig. 113c; Frémy 1930, fig. 42; Smith 1920, pl. 1, fig. 1. PL. 4, FIG. 3

C. PLANCTONICUS Bethge 1935. Huber-Pestalozzi 1938, fig. 35; Bethge 1935, fig. 1-2. PL. 4, FIG. 4

C. TURGIDUS Nägeli 1849. Whitford and Schumacher 1973, pl. 60, fig. 10; Taft and Taft 1971, fig. 581; Prescott 1968, pl. 9, fig. 127; Proschkina-Lavrenko et Makarova 1968, fig. 11, no 23-31; Prescott 1962, pl. 100, fig. 19; Geitler 1960, fig. 34; Fott 1959, fig. 6_4; Desikachary 1959, pl. 26, fig. 6; Van Meel 1954, pl. 70, fig. 10; Tiffany and Britton 1952, pl. 91, fig. 1048; Smith 1950, fig. 448A, 453A; Nygaard 1945, fig. 1; Huber-Pestalozzi 1938, fig. 25; Thompson 1938, pl. 1, fig. 1; Frémy 1934, pl. 4, fig. 5; Geitler 1932, fig. 109b, 110; Frémy 1930, fig. 40; Smith 1920, pl. 1, fig. 9. PL. 4, FIG. 5

C. VARIUS Braun *in* Rabenhorst 1861-1878. Whitford and Schumacher 1973, pl. 60, fig. 12; Prescott 1962, pl. 100, fig. 15; Desikachary 1959, pl. 24, fig. 5; Frémy 1934, pl. 4, fig. 7; Geitler 1932, fig. 114a. PL. 4, FIG. 6

COELOSPHAERIUM Nägeli 1849

All species treated in this work are probably euplanktonic. Species of this genus evidently have no great affinity for waters highly enriched with organic nutrients.

KEY TO SPECIES

1a Cells distinctly longer (2-3 times) than broad ..... *C. NAEGELIANUM*

1b Cells spherical or broadly ellipsoidal 2

2a (1) Cells up to 2.3 μ broad, colony 15-25 μ in diameter ... *C. PUSILLUM*

2b Cells 2.3-4 μ wide, colony 20-90 μ in diameter ... *C. KUETZINGIANUM*

ILLUSTRATIONS

C. KUETZINGIANUM Nägeli 1849. Whitford and Schumacher 1973, pl. 60, fig. 50; Taft and Taft 1971, fig. 583; Prescott 1962, pl. 106, fig. 2; Fott 1959, fig. 7_2; Desikachary 1959, pl. 28, fig. 7-8; Skuja 1956, pl. 5, fig. 19; Van Meel 1954, pl. 71, fig. 7, 11; Tiffany and Britton 1952, pl. 90, fig. 1045; Smith 1950, fig. 470A; Nygaard 1945, pl. 4, fig. 5; Huber-Pestalozzi 1938, fig. 44; Geitler 1932, fig. 121c, d; Smith 1920, pl. 3, fig. 4-5. PL. 4, FIG. 7

C. NAEGELIANUM Unger 1854. (= *Woronichinia naegeliana*). Whitford and Schumacher 1973, pl. 60, fig. 51; Taft and Taft 1971, fig. 584; Prescott 1962, pl. 106, fig. 4; Desikachary 1959, pl. 28, fig. 9, 16; Mabille 1956, fig. 1; Van Meel 1954, pl. 71, fig. 2, 10; Prescott 1954, fig. 378a; Smith 1950, fig. 470B,C; Nygaard 1945, pl. 1, fig. 4; Geitler 1942, fig. 40 c-d; Huber-Pestalozzi 1938, fig. 49; Geitler 1932, fig. 121a, b, e, fig. 122b, c; Smith 1920, pl. 3, fig. 6, pl. 4, fig. 1. PL. 4, FIG. 8

C. PUSILLUM Van Goor 1924. (= *Gomphosphaeria pusilla*). Van Goor 1924, fig. 10

CYLINDROSPERMUM Kützing 1843

Although this is not a small genus, only one of its species (*Cylindrospermum majus*) in this investigation has revealed possible ecologically diagnostic characteristics. It mostly is associated with a lower inorganic nutrient status (dystrophic-oligotrophic), evidently avoiding the more alkaline waters and higher organic nutrient concentrations. It is one of the few blue green algae species that apparently does not show great adversity to pH below 7.

Cylindrospermum majus (maius) Kützing 1843. Cells short and cylindrical

or barrel shaped, 3-5 μ in diameter, 4-6 μ long. Heterocysts elongated and only slightly larger than vegetative cells, 5-10 μ long. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 62, fig. 16; Proschkina-Lavrenko et Makarova 1968, fig. 11, no. 13-17; Prescott 1964, fig. 351; Prescott 1962, pl. 122, fig. 11, 12; Desikachary 1959, pl. 8, fig. 1; Geitler 1942, fig. 127b; Thompson 1938, pl. 2, fig. 6; Huber-Pestalozzi 1938, fig. 83; Geitler 1932, fig. 520b; Frémy 1930, fig. 315; Tilden 1910, pl. 10, fig. 4. PL. 4, FIG. 9

DACTYLOCOCCOPSIS Hansgirg 1888

All species treated in this work seem to be associated with low levels of nutrients and are planktonic.

KEY TO SPECIES

1a Cells more or less bent 2

1b Cells straight or almost straight, club shaped, or tear drop shaped 3

2a (1) Cells 1-3 μ broad, 5-25 μ long ..... *D. RHAPHIDIOIDES*

2b Cells 1-1.5 μ broad, 27-45 μ long ..... *D. IRREGULARIS*

3a (1) Cells over 3.2 μ broad at maturity ..... *D. SMITHII*

3b Cells less than 3.2 μ broad at maturity ..... *D. ELLIPSOIDEUS*

ILLUSTRATIONS

D. ELLIPSOIDEUS Geitler 1942. (= *Rhabdogloea ellipsoidea*). B. Schröder 1917, pl. 10, fig. 3. (*Dactylococcopsis smithii* is probably synonymous with *D. ellipsoideus*). PL. 4, FIG. 10

D. IRREGULARIS Smith 1922. Huber-Pestalozzi 1938, fig. 63; Geitler 1932, fig. 138a; Smith 1922, fig. 26-28. FIG. 4, FIG. 11

D. RHAPHIDIOIDES Hansgirg 1888. Prescott 1962, pl. 105, fig. 13-15; Desikachary 1959, pl. 29, fig. 1-2; Van Meel 1954, pl. 71, fig. 8; Geitler 1942, fig. 28d; Huber-Pestalozzi 1938, fig. 62; Geitler 1932, fig. 137; Frémy 1930, fig. 1. PL. 4, FIG. 12

D. SMITHII Chodat *et* Chodat 1925. Prescott 1962, pl. 105, fig. 3, 4;

Huber-Pestalozzi 1938, fig. 66. PL. 4, FIG. 13

DESMONEMA Berkeley *et* Thwaites 1849

This genus has only one taxon that is important in water quality evaluation, *Desmonema wrangelii*, indigenous to waters low in organic nutrients (saprophobic).

Desmonema wrangelii Bornet *et* Flahault 1887. (= *Coleodesmium wrangelii*, *Calothrix dillwynii*). Several parallel trichomes within one sheath; heterocysts basal and trichome attenuated toward the apical or distal end. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 64, fig. 11; Geitler 1932, fig. 512; Tilden 1910, pl. 14, fig. 10. PL. 4, FIG. 14

DICHOTHRIX Zanardini 1858

This genus, although not small in number of species, apparently has only one species (*D. gypsophila*) with any real indicative value in dealing with water quality evaluation. Evidence is good that this species avoids environments of high nutrient content; it has the added advantage of being a diagnostic periphytic (epilithic) form, implying that usually it develops indigenous to the area where it occurs and is not regarded as allochthonous or of exogenous occurrence when found (especially in abundance).

Dichothrix gypsophila Bornet *et* Flahault 1886. Cells shorter than wide at base and with convex walls, about 6-8 μ in diameter; cells becoming longer than wide at distal end, cylindrical and without constricted cross walls, tapering to a point. Filament profusely branched; branches parallel to the principal trichome and enclosed in the same sheath for a prominent distance. Sheaths are highly variable. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 69, fig. 1; Prescott 1962, pl. 133, fig. 1, 2; Desikachary 1959, pl. 107, fig. 5, 8, 9; Geitler 1942, fig. 112; Frémy 1934, pl. 41, fig. 3; Geitler 1932, fig. 372; Frémy 1930, fig. 241; Tilden 1910, pl. 19, fig. 2. PL. 5, FIG. 1

FISCHERELLA Gomont 1895

This is an interesting genus ecologically, but it has little to offer in the present state of knowledge concerning water quality appraisal.

Fischerella muscicola Gomont 1895. (= *Stigonema muscicola*). Thallus prostrate, main filament multiseriate (10-14 μ in diameter) with several unilateral and uniseriate branches (4-6 μ in diameter) which may give rise to hormogonia up to 100 μ long. Heterocysts rectanguloid or globular and about the size of normal vegetative cells. ILLUSTRATIONS - Hollerbakh et Schtina 1969, fig. 39, no. 1; Prescott 1962, pl. 130, fig. 7, 8; Geitler 1960, fig. 87; Geitler 1942, fig. 84; Geitler 1932, fig. 294. PL. 5, FIG. 2

GLOEOCAPSA Kützing 1843

In spite of the fact that this is a large genus it is of little value in indicating water quality because the precise ecology of the component species is so poorly known. Evidently few, if any, species are indigenous to highly polluted regions.

Gloeocapsa aeruginosa Kützing 1845-1849. Irregular or globular thallus consisting of firm blue green mucilage with spherical blue green cells 2-4 μ in diameter arranged in groups of 1-6 and surrounded by colorless sheaths 4-8 μ wide. ILLUSTRATIONS - Prescott 1962, pl. 101, fig. 6; Geitler 1960, fig. 3e; Tilden 1910, pl. 1, fig. 19. PL. 5, FIG. 3

GLOEOTRICHIA J. G. Agardh 1842

This genus has few (if any) species that are important as indicators of organic enrichment; however, *Gloeotrichia echinulata* is important in blooms and is saproxenous, and *G. natans* may be associated with β mesosaprobic conditions.

KEY TO SPECIES

1a Layer (matrix) firm, filaments separable with difficulty by pressure ..... *G. PISUM*

1b Layer (matrix) delicate, filaments separable easily with pressure 2

2a (1) Colonies globular or spherical, planktonic with radiating arrangement of trichomes from common center ..... *G. ECHINULATA*

2b Colonies not planktonic or if free floating, irregularly globular or globose with radiating trichomes ..... *G. NATANS*

ILLUSTRATIONS

G. ECHINULATA Richter 1894. Whitford and Schumacher 1973, pl. 69, fig. 5; Taft and Taft 1971, fig. 650; Hollerbakh et Schtina 1969, fig. 40, no. 9-11; Prescott 1968, pl. 12, fig. 155; Prescott 1962, pl. 134, fig. 1, 2; Geitler 1960, fig. 9b; Desikachary 1959, pl. 116, fig. 9-10; Smith 1950, fig. 523; Nygaard 1945, fig. 6; Geitler 1942, fig. 3b; Geitler 1932, fig. 409; Smith 1920, pl. 11, fig. 5-6; Richter 1894, fig. 1-8. PL. 5, FIG. 4

G. NATANS Rabenhorst 1847. Taft and Taft 1971, fig. 651; Proschkina-Lavrenko et Makarova 1968, fig. 11, no. 5-8; Prescott 1962, pl. 134, fig. 6, 7; Palmer 1959, fig. 37; Fott 1959, fig. 11_4, 12; Tiffany and Britton 1952, pl. 106, fig. 1171, 1172; Huber-Pestalozzi 1938, fig. 70; Geitler 1932, fig. 406, 407. PL. 5, FIG. 5

G. PISUM Thuret 1875. Prescott 1962, pl. 134, fig. 8-10; Geitler 1960, fig. 93a; Tiffany and Britton 1952, pl. 106, fig. 1173, 1174; Geitler 1942, fig. 118; Huber-Pestalozzi 1938, fig. 73; Frémy 1934, pl. 47, fig. 1; Geitler 1932, fig. 401; Frémy 1929, fig. 244. PL. 5, FIG. 6

GOMPHOSPHAERIA Kützing 1836

The two species treated in this work are diagnostic planktonic forms; they evidently are restricted to the β mesosaprobic-oligosaprobic part of the saprobian spectrum, but vary widely in respect to inorganic nutrients.

KEY TO SPECIES

1a Cells 2-4 μ in diameter, thallus aquatic ..... *G. LACUSTRIS*

1b Cells 4-15 μ in diameter, thallus aquatic or subaerial . *G. APONINA*

ILLUSTRATIONS

G. APONINA Kützing 1836. Whitford and Schumacher 1973, pl. 60, fig. 52; Taft and Taft 1971, fig. 589; Proschkina-Lavrenko et Makarova 1968, fig. 19, no. 2; Prescott 1964, fig. 373a; Prescott 1962, pl. 106, fig. 5; Geitler 1960, fig. 35a; Desikachary 1959, pl. 28, fig. 1-3; Tiffany and Britton 1952, pl. 90, fig. 1042, 1043; Smith 1950, fig. 472; Nygaard 1945, pl. 1, fig. 7; Huber-Pestalozzi 1938, fig. 39; Frémy

1934, pl. 4, fig. 2; Geitler 1932, fig. 117a-c, 118b; Frémy 1930, fig. 39; Smith 1920, pl. 4, fig. 2-3. PL. 6, FIG. 1

G. LACUSTRIS Chodat 1898. Whitford and Schumacher 1973, pl. 60, fig. 53; Taft and Taft 1971, fig. 591; Proschkina-Lavrenko et Makarova 1968, fig. 19, no. 1; Prescott 1964, fig. 373b; Prescott 1962, pl. 106, fig. 9; Geitler 1960, fig. 72b-c; Desikachary 1959, pl. 28, fig. 4-6, 12, 13; Van Meel 1954, pl. 71, fig. 5; Geitler 1942, fig. 40a; Huber-Pestalozzi 1938, fig. 38; Frémy 1934, pl. 4, fig. 1; Geitler 1932, fig. 117d, e, 118a; Frémy 1930, fig. 38. PL. 6, FIG. 2

HAPALOSIPHON Nägeli 1849

Few species in this genus have been investigated in sufficient detail to result in any meaningful inferences; however, it is likely that *Hapalosiphon fontinalis* is an oligosaprobic indicator.

Hapalosiphon fontinalis Bornet 1889. (= *H. pumilus, H. intricatus*). Thallus 1000-3000 μ high, floccose or caespitose; side branches long, erect and thinner (9-12 μ wide) than main filament and with a thinner sheath; hormogonia 5-7 μ wide, 100-300 μ long, consisting of about 10-50 cells. Main filament interwoven, 12-24 μ wide, mostly uniseriate or occasionally multiseriate, cells spherical and about as broad as long. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 67, fig. 3; Hollerbakh et Schtina 1969, fig. 39, no. 2; Geitler 1960, fig. 27c, d; Desikachary 1959, pl. 130, fig. 3; Smith 1950, fig. 513; Geitler 1932, fig. 332; Frémy 1930, fig. 342; Tilden 1910, pl. 14, fig. 13. PL. 6, FIG. 3

HOMOEOTHRIX Kirchner 1898

Evidently so few species of this genus have been observed and studied in ecological detail in the field that little of diagnostic value has appeared in the literature.

Homoeothrix crustacea Woronichin 1923. Thallus brown, more or less thickened with calcareous incrustations; filaments closely crowded, erect, in the upper part essentially branched out in a brush-like manner, 165-460

μ long, about 3 μ wide; cells 1.5-2.5 μ wide, about as broad as long or sometimes longer, shorter than broad at apex, constricted at cross walls.
ILLUSTRATIONS - Elenkin 1949, Abb. 558. PL. 6, FIG. 4

LYNGBYA C. A. Agardh 1824

It is striking that so large a genus as this has supplied us with so few good indicator species of water quality. Little is known about the member species in respect to water quality even though they are found in a great variety of ecological conditions. No species has any great diagnostic value, although species included in the present work were thought to generally occupy the middle part of the saprobian spectrum (± mesosaprobic).

KEY TO SPECIES

1a Filaments attached at base, upright ..... *L. KUETZINGII*

1b Filaments without apparent basal portion, sometimes however with the middle or the entire length attached 2

≡ 2a (1) Filaments more or less regularly coiled or twisted 3
1a appendix

≡ 2b Filaments not coiled or twisted 4
1b appendix

3a (2) Cells longer than broad ..... *L. CONTORTA* I

3b Cells shorter or little longer than wide ..... *L. CIRCUMCRETA* I

≡ 4a (2) Filaments singular and free floating ..... *L. LIMNETICA* I
4a appendix

≡ 4b Filaments not singular or free floating 5
4b appendix

5a (4) Filaments up to 4 or 5 μ wide ..... *L. DIGUETI* I

5b Filaments wider ..... *L. MARTENSIANA* I

DESCRIPTION OF SPECIES

Filaments solitary, not attached, short and in a broad helical or screw-shaped pattern, with 2-9 complete spirals (usually 2-3); sheaths very thin, firm and colorless; cells usually quadratic or shorter than broad, 1.5-2.5 μ broad, 1-2 μ long, pale blue-green; terminal cell rounded, without calyptra ..... *L. CIRCUMCRETA*

Filaments helically coiled or spiraled (rarely straight); trichomes

without constricted cross walls and not tapering at the apices; cells longer than broad, 1.5-2 μ in diameter, 3.5-5 μ long; sheaths firm and thin ..... *L. CONTORTA*

Filaments solitary or entangled, sometimes forming bundles, often attached to filamentous algae which have walls that are non-mucilaginous; filaments up to 3.2 μ in diameter; sheaths thin; trichomes 2.5-3 μ in diameter; cells 1.5-3.5 μ long; apical cell convex ..... *L. DIGUETII*

Filaments straight or slightly bent, rigid, individual or more often gregareous, 2-3.5 μ broad, 30-70 μ long, attached at base; sheath narrow and colorless; cells 1.5-2 μ broad, usually 1/2 to 1/3 as long as broad; without constricted cross walls, without granules, pale blue-green; end cell rounded ..... *L. KUETZINGII*

Filaments straight or slightly bent, solitary, 1-3 μ wide; trichomes 1-1.25 μ in diameter, not tapering at the apices; cells 1-12 μ long without constricted cross walls, with or without granules (gas vacuoles); sheaths colorless and thin; end cell not attenuated, usually slightly rounded ..... *L. LIMNETICA*

Filaments long, about 6-14 μ broad, more or less curved, entangled and interwoven, forming a blue-green thallus; sheath colorless, firm, fairly thick (1.5-2 μ); trichomes 6-12 μ broad, conspicuously rounded apical cells, pale blue-green; cells about 1/2 to 1/4 as long as broad; 1.7-3.3 μ long; 1 or 2 conspicuous granules (=gas vacuoles) at cross walls which are not constricted ..... *L. MARTENSIANA*

ILLUSTRATIONS

L. CIRCUMCRETA G. S. West 1907. Van Meel 1954, pl. 72, fig. 3; Huber-Pestalozzi 1938, fig. 204; Geitler 1932, fig. 661k; Frémy 1930, fig. 171; G. S. West 1907, pl. 9, fig. 7. PL. 6, FIG. 5

L. CONTORTA Lemmermann 1898a. Guarrera *et al.* 1972, pl. 5, fig. 4; Taft and Taft 1971, fig. 609; Bourrelly 1970, pl. 130, fig. 1, 2; Prescott 1962, pl. 112, fig. 1; Desikachary 1959, pl. 48, fig. 5, pl. 50, fig. 5, 9; Van Meel 1954, pl. 73, fig. 9-10; Smith 1950, fig. 492A; Huber-

Pestalozzi 1938, fig. 202; Frémy 1934, pl. 29, fig. 2; Frémy 1930, fig. 172; Smith 1920, pl. 7, fig. 12-13; Lemmermann 1898, pl. 5, fig. 10-13. PL. 6, FIG. 6

L. DIGUETI Gomont *in* Hariot 1895. Whitford and Schumacher 1973, pl. 61, fig. 50; Prescott 1962, pl. 112, fig. 8; Desikachary 1959, pl. 53, fig. 8; Palmer 1959, pl. 3; Tiffany and Britton 1952, pl. 92, fig. 1070; Geitler 1932, fig. 656e; Frémy 1930, fig. 163. PL. 6, FIG. 7

L. KUETZINGII Schmidle 1896 (1897). Desikachary 1959, pl. 48, fig. 2; Geitler 1942, fig. 146. PL. 6, FIG. 8

L. LIMNETICA Lemmermann 1898b. Proschkina-Lavrenko et Makarova 1968, fig. 29, no. 3-4; Lund 1962, fig. 62; Prescott 1962, pl. 112, fig. 7; Desikachary 1959, pl. 50, fig. 11; Van Meel 1954, pl. 73, fig. 8; Nygaard 1945, pl. 1, fig. 16; Huber-Pestalozzi 1938, fig. 207; Frémy 1934, pl. 29, fig. 3; Geitler 1932, fig. 661a, b; Frémy 1930, fig. 165; Smith 1920, pl. 7, fig. 9-11; Lemmermann 1910, fig. 8. PL. 6, FIG. 9

L. MARTENSIANA Meneghini 1837. Whitford and Schumacher 1973, pl. 61, fig. 55; Hollerbakh et Schtina 1969, fig. 5, no. 12; Prescott 1962, pl. 112, fig. 11; Fott 1959, fig. 13_6; Desikachary 1959, pl. 52, fig. 6; Frémy 1934, pl. 29, fig. 1; Geitler 1932, fig. 676; Frémy 1930, fig. 158; Tilden 1910, pl. 5, fig. 43. PL. 6, FIG. 10

MERISMOPEDIA Meyen 1839

Members of this genus occur under a variable range of organic nutrient content (saprobian spectrum) and salt content (halobian spectrum). Few, if any, species are of any value in water quality investigations.

KEY TO SPECIES

1a Cells up to 2 1/2 times as long as broad ..... *M. CONVOLUTA*

1b Cells as long as broad or slightly longer than broad 2

2a (1) Cells up to 3.5 μ broad 3

2b Cells broader 4

3a (2) Cells .5 to .8 μ broad ..... *M. MINIMA*

3b Cells 1.3 to 2 μ broad ..... *M. TENUISSIMA*

3c Cells 2.5 to 3.5 μ broad ..... *M. PUNCTATA*

4a (2) Cells 3-6 μ broad ..... *M. GLAUCA*

4b Cells 5-10 μ broad ..... *M. ELEGANS*

ILLUSTRATIONS

M. CONVOLUTA De Brébisson *in* Kützing 1849. Whitford and Schumacher 1973, pl. 60, fig. 44; Taft and Taft 1971, fig. 594; Prescott 1962, pl. 103, fig. 13; Geitler 1960, fig. 37; Desikachary 1959, pl. 29, fig. 8, 12, 13; Geitler 1942, fig. 37. PL. 6, FIG. 11

M. ELEGANS Braun *in* Kützing 1849. Whitford and Schumacher 1973, pl. 60, fig. 45; Taft and Taft 1971, fig. 596; Proschkina-Lavrenko et Makarova 1968, fig. 18, no. 6; Prescott 1962, pl. 101, fig. 1; Desikachary 1959, pl. 29, fig. 9; Van Meel 1954, pl. 71, fig. 12; Smith 1950, fig. 468A; Nygaard 1945, fig. 5; Huber-Pestalozzi 1938, fig. 54; Thompson 1938, pl. 1, fig. 9; Geitler 1932, fig. 129e; Smith 1920, pl. 2, fig. 5. PL. 6, FIG. 12

M. GLAUCA Nägeli 1849. (= *Agmenellum quadruplicatum* ex parte). Whitford and Schumacher 1973, pl. 60, fig. 46; Taft and Taft 1971, fig. 597; Proschkina-Lavrenko et Makarova 1968, fig. 18, no. 3; Prescott 1962, pl. 101, fig. 2-4; Geitler 1960, fig. 36b, c, 38; Desikachary 1959, pl. 29, fig. 5; Fott 1959, fig. 8; Palmer 1959, fig. 9, and pl. 4; Tiffany and Britton 1952, pl. 91, fig. 1052; Nygaard 1945, pl. 1, fig. 6; Huber-Pestalozzi 1938, fig. 59; Geitler 1932, fig. 129d; Smith 1920, pl. 2, fig. 4. PL. 6, FIG. 13

M. MINIMA Beck *in* Beck *et* Zahlbruchner 1897. Guarrera *et al.* 1972, pl. 4, fig. 5; Proschkina-Lavrenko et Makarova 1968, fig. 18, no. 1, 2; Desikachary 1959, pl. 29, fig. 11; Skuja 1949, pl. 1, fig. 11. PL. 6, FIG. 14

M. PUNCTATA Meyen 1839. Whitford and Schumacher 1973, pl. 60, fig. 48; Guarrera *et al.* 1972, pl. 4, fig. 6; Taft and Taft 1971, fig. 599;

Proschkina-Lavrenko et Makarova 1968, fig. 18, no. 4-5; Prescott 1962, pl. 102, fig. 10; Geitler 1960, fig. 36a; Desikachary 1959, pl. 23, fig. 5, pl. 29, fig. 6; González Guerrero 1950, pl. 1, fig. 8; Smith 1950, fig. 468B; Huber-Pestalozzi 1938, fig. 58; Thompson 1938, pl. 1, fig. 8; Geitler 1932, fig. 129c. PL. 6, FIG. 15

M. TENUISSIMA Lemmermann 1898b. (= *Agmenellum quadruplicatum* ex parte). Whitford and Schumacher 1973, pl. 60, fig. 49; Taft and Taft 1971, fig. 600; Prescott 1968, pl. 10, fig. 132; Prescott 1962, pl. 100, fig. 17; Desikachary 1959, pl. 29, fig. 7, pl. 30, fig. 8,9; Palmer 1959, pl. 3; Nygaard 1945, fig. 4; Huber-Pestalozzi 1938, fig. 57; Geitler 1932, fig. 129a-b; Smith 1920, pl. 2, fig. 2. PL. 6,FIG.16

MICROCOLEUS Desmazières 1823

Much more observation on field ecology needs to be conducted on members of this genus. Only *Microcoleus subtorulosus* exhibits good indicative characteristics with respect to nutrient content; it is an oligosaprobic and periphytic indicator and is not typically found in waters of high organic content. Patrick *et al.* (1967) implied that *Microcoleus vaginatus* is pollution tolerant Evidently these authors interpret this species as *sensu lato* which includes *Phormidium autumnale* Gomont 1890. If *P. autumnale* is treated separately from *M. vaginatus* (as it is in the present work), then the latter species is of essentially no value in water quality evaluation.

Microcoleus subtorulosus Gomont 1890. Sheath very gelatinous; trichomes straight and numerous, attenuated at ends, 6-10 μ broad, conspicuously constricted at cross walls; cells 5-10 μ long, end cell not capitate. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 61, fig. 74; Desikachary 1959, pl. 56, fig. 8, 9; Palmer 1959, pl. 4; Geitler 1932, fig. 751; Tilden 1910, pl. 6, fig. 32; Gomont 1892, pl. 14, fig. 14-15. PL. 7, FIG. 1

MICROCROCIS Richter 1892

This a fairly unimportant genus ecologically (from the standpoint of nutrients); however, *Microcrocis geminata* appears to be eutrophic in respect to inorganic nutrients.

Microcrocis geminata Geitler 1942. (= *Holopedia geminata, Microcrocis dieteli*). Colonies large (about 1-3 mm. across), leaf-like, flat; cells cylindrical, thick, often loosely stratified, about 12-14 μ long and 6-7 μ broad. ILLUSTRATIONS - Drouet and Daily 1956, fig. 181; Geitler 1942, fig. 36; Huber-Pestalozzi 1938, fig. 59B; Geitler 1932, fig. 131. PL. 7, FIG. 2

MICROCYSTIS Kützing 1833

Most species in this work are mesotrophic-eutrophic forms and are found in the less enriched part of the saprobian spectrum. *Microcystis aeruginosa* is a diagnostic planktonic mesotrophic-eutrophic indicator. The genus is characterized by planktonic forms.

KEY TO SPECIES

1a	Cells spherical	2
1b	Cells elongated	*M. ELABENS*
2a (1)	Cells with gas vacuoles	3
2b	Cells without gas vacuoles	*M. INCERTA*
3a (2)	Cells 3-7 μ broad	*M. VIRIDIS*
3b	Cells less than 3 μ broad	4
4a (3)	Colonies prominently perforated (fenestrated)	5
4b	Colonies not prominently perforated	*M. FLOSAQUAE*
5a (4)	Prominent refractive mucilage (with shining appearance under the microscope)	*M. WESENBERGII*
5b	Surrounding mucilage absent	*M. AERUGINOSA*

ILLUSTRATIONS

M. AERUGINOSA Kützing 1846. (= *Anacystis cyanea, Polycystis aeruginosa*). Whitford and Schumacher 1973, pl. 60, fig. 24; Taft and Taft 1971, fig. 601; Proschkina-Lavrenko et Makarova 1968, fig. 13, no. 1-2; Lund 1962, fig. 58; Prescott 1964, fig. 377b; Prescott 1962, pl. 102, fig. 1-4; Lund 1962, fig. 58; Palmer 1959, fig. 8, and pl. 1; Fott 1959, fig. 6_2; Desikachary 1959, pl. 17, fig. 1, 26, pl. 18, fig. 10;

Van Meel 1954, pl. 70, fig. 1-2; Tiffany and Britton 1952, pl. 91, fig. 1053, 1054; Smith 1950, fig. 457; Nygaard 1945, pl. 1, fig. 1; Geitler 1942, fig. 31; Huber-Pestalozzi 1938, fig. 4; Geitler 1932, fig. 59d; Frémy 1930, fig. 15; Crow 1923, fig. a. PL. 7, FIG. 3

M. ELABENS Kützing 1846. (= *Polycystis elabens)*. Desikachary 1959, pl. 18, fig. 12, pl. 20, fig. 6-7; Geitler 1942, fig. 32b; Huber-Pestalozzi 1938, fig. 6; Frémy 1934, pl. 2, fig. 1; Geitler 1932, fig. 65; Frémy 1930, fig. 19; Tilden 1910, pl. 2, fig. 19. PL. 7, FIG. 4

M. FLOSAQUAE Kirchner 1898. (=*Polycystis flosaquae)*. Whitford and Schumacher 1973, pl. 60, fig. 26; Taft and Taft 1971, fig. 603; Prescott 1964, fig. 377a; Desikachary 1959, pl. 17, fig. 11, pl. 18, fig. 11; Van Meel 1954, pl. 70, fig. 3; Huber-Pestalozzi 1938, fig. 5; Geitler 1932, fig. 59e, f; Frémy 1930, fig. 16. PL. 8, FIG. 1

M. INCERTA Lemmermann 1899. (= *M. pulverea* f. *incerta, M. reinboldii)*. Taft and Taft 1971, fig. 604; Proschkina-Lavrenko et Makarova 1968, fig. 14, no. 2; Prescott 1962, pl. 102, fig. 5; Tiffany and Britton 1952, pl. 91, fig. 1055; Nygaard 1945, pl. 1, fig. 3; Huber-Pestalozzi 1938, fig. 5D; Geitler 1932, fig. 64. PL. 8, FIG. 2

M. VIRIDIS Lemmermann 1903. Desikachary 1959, pl. 18, fig. 1-6; Huber-Pestalozzi 1938, fig. 2; Frémy 1934, pl. 1, fig. 8. PL. 8, FIG. 3

M. WESENBERGII Komárek *in* Kondratjewa 1964. (= *Diplocystis wesenbergii*). Lund 1962, fig. 59-60. PL. 8, FIG. 4

NODULARIA Mertens *in* Jürgens 1822, Dec. 15, No. 4

The one species (*Nodularia spumigena*) reported in the present work is probably β mesosaprobic and is found in brackish waters; it is notorious as a producer of materials toxic to higher animals. The genus is not of any special value in water quality appraisal in fresh waters proper.

Nodularia spumigena Mertens *in* Jürgens 1822, Dec. 15, No. 4. Filaments 8-15 μ in diameter, enclosed in entanglements in gelatinous masses. Cells

6-10 μ in diameter, about 5-7 μ long, very compressed in appearance. Akinetes intercalary, about 12-15 μ in diameter, 6-10 μ long. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 62, fig. 24; Taft and Taft 1971, fig. 640; Prescott 1968, pl. 11, fig. 148; Proschkina-Lavrenko et Makarova 1968, fig. 29, no. 1; Prescott 1962, pl. 122, fig. 3-5; Palmer 1959, pl. 5; Desikachary 1959, pl. 80, fig. 13, 14; Tiffany and Britton 1952, pl. 99, fig. 1139; Smith 1950, fig. 505; Geitler 1942, fig. 21; Huber-Pestalozzi 1938, fig. 107; Frémy 1934, pl. 60, fig. 4; Geitler 1932, fig. 554b, c. PL. 8, FIG. 5

NOSTOC Vaucher 1803

All species encountered in this study were found in the enriched part of the saprobian spectrum. Very little information is listed in the species profile sheets concerning the nutrient spectrum, however most species are probably typical of eutrophic waters. Most species tend to be non-planktonic.

KEY TO SPECIES

1a	Usually endophytic, symbiotic (on liverworts) (probably facultative in aquatic habitats)	*N. SPHAERICUM*
1b	Free living	2
2a (1)	Colonial mass (layer) without compact outer gelatinous layer, more or less formless	4
2b	Colonial mass (layer) with compact outer layer	3
3a (2)	Trichomes not radially arranged	*N. CAERULEUM (COERULEUM)*
3b	Trichomes radially arranged	*N. ZETTERSTEDTII*
4a (2)	Plant body (colonial mass) microscopically small	*N. PALUDOSUM*
4b	Plant body (colonial mass) macroscopically large (visible)	5
≡ 5a (4) **5a appendix**	Colonies aquatic, olive green to blue green or dirty green; akinetes without ochraceous membranes	6
≡ 5b **5b appendix**	Colonies generally aerophytic or subaerial, brownish; akinetes with ochraceous membranes (probably facultative in aquatic habitats)	*N. MUSCORUM* I
6a (5)	Trichomes densely entangled, strongly curved	*N. LINCKIA* I
6b	Trichomes loosely or not densely disposed	*N. CARNEUM* I

ILLUSTRATIONS

N. CARNEUM C. A. Agardh 1824. Prescott 1962, pl. 119, fig. 9; Geitler 1960, fig. 98b; Desikachary 1959, pl. 69, fig. 6; Tiffany and Britton 1952, pl. 101, fig. 1154; Geitler 1942, fig. 132b; Huber-Pestalozzi 1938, fig. 95; Geitler 1932, fig. 530; Frémy 1930, fig. 278; Tilden 1910, pl. 7, fig. 3. PL. 8, FIG. 6

N. CAERULEUM (COERULEUM) Lyngbye 1819. Taft and Taft 1971, fig. 641; Prescott 1962, pl. 119, fig. 10, 11; Huber-Pestalozzi 1938, fig. 101; Frémy 1934, pl. 59, fig. 3. PL. 8, FIG. 7

N. LINCKIA Bornet *et* Thuret 1880. Prescott 1962, pl. 119, fig. 14-16; Geitler 1960, fig. 12, 66f-1; Smith 1950, fig. 501; Huber-Pestalozzi 1938, fig. 93; Frémy 1934, pl. 58, fig. 1; Geitler 1932, fig. 528b; Frémy 1930, fig. 276; Tilden 1910, pl. 7, fig. 1. PL. 8, FIG. 8

N. MUSCORUM C. A. Agardh 1812. Whitford and Schumacher 1973, pl. 62, fig. 3; Hollerbakh et Schtina 1969, fig. 29, no. 6; Prescott 1962, pl. 120, fig. 6; Desikachary 1959, pl. 70, fig. 2; Tiffany and Britton 1952, pl. 100, fig. 1149; Geitler 1932, fig. 535; Frémy 1930, fig. 281; Tilden 1910, pl. 7, fig. 12-14. PL. 8, FIG. 9

N. PALUDOSUM Kützing 1850. Whitford and Schumacher 1973, pl. 62, fig. 4; Hollerbakh et Schtina 1969, fig. 39, no. 5; Prescott 1962, pl. 121, fig. 1-3; Desikachary 1959, pl. 69, fig. 2; Huber-Pestalozzi 1938, fig. 92; Geitler 1932, fig. 528a; Frémy 1930, fig. 275; Tilden 1910, pl. 6, fig. 38. PL. 8, FIG. 10.

N. SPHAERICA (SPHAERICUM) Vaucher 1803. Whitford and Schumacher 1973, pl. 62, fig. 9, 9a; Prescott 1962, pl. 121, fig. 6-9; Geitler 1942, fig. 134; Frémy 1934, pl. 59, fig. 1; Geitler 1932, fig. 539b; Frémy 1930, fig. 284; Tilden 1910, pl. 8, fig. 2. PL. 9, FIG. 1

N. ZETTERSTEDTII Areschoug 1872. Huber-Pestalozzi 1938, fig. 104; Geitler 1932, fig. 549. PL. 9, FIG. 2

ONCOBYRSA C. A. Agardh 1827

Oncobyrsa is not important in appraising water quality because of the wide tolerance of its members and because of the general lack of ecological knowledge in the literature.

Oncobyrsa cesatii (cesatiana) Rabenhorst 1865. (= *Hydrococcus cesatii)*. Bottom more or less circular, mostly clearly nematoparenchymatous, more rarely blastoparenchymatous. Cells of the nematoparenchyma (namely marginal cells) longer than wide, about 2 μ wide and 4 μ long. Filaments mostly radially arranged, often with bent end cells. At maturity mostly growing upright, with radial or parallel filaments, with crust shaped or hemispherical nodules. Microscopically small thallus. Cells of upright filaments as long as wide or longer than wide, 1-2.5 μ broad. ILLUSTRATIONS - Friedrich 1973, pl. 5, fig. g, pl. 13, fig. h; Fott 1959, fig. 9a,b; Geitler 1932, fig. 192; Tilden 1910, pl. 2, fig. 41. PL. 9, FIG. 3

OSCILLATORIA Vaucher 1803

This is by far the most significant of all blue green algae genera in determining water quality and it is highly significant as a diagnostic indicator among other major algae groups. According to Palmer 1969, only *Euglena* (flagellate) is more important as a genus of algae indicative of pollution. Virtually all species of *Oscillatoria* encountered in the present investigation of the literature are heavily favored by occurrence in organically nutrified waters. Evidently there is only one species (*Oscillatoria splendida)* in which there is any possibility of any important evidence that may indicate a potential occurrence characteristic of saprophobic or katharobic conditions (= avoidance of organically enriched waters). The species of this genus are typically found in stagnant waters; no species encountered in this investigation is known by the writer to be characteristic of the rheophilous-rheobiontic end of the current spectrum. It is one of the few genera of blue green algae which is found under a wide variation in pH and halobion spectra. This genus is probably the most important of all blue green algae from the standpoint of total biomass because of its wide tolerance of pH, salt, and enrichment conditions.

KEY TO SPECIES

1a Cells very short, breadth at most 1/3 of length 2

1b	Cells with length being 1/3 of breadth or longer	6
2a (1)	Trichome not tapered or scarcely tapered at ends	3
2b	Trichome prominently tapered at end	*O. ANGUINA*
3a (2)	Cells of trichome with constricted crosswalls	*O. SANCTA*
3b	Cells of trichome not constricted at crosswalls	4
4a (3)	Trichome more than 23 μ in diameter	*O. PRINCEPS*
4b	Trichomes less than 23 μ	5
5a (4)	Trichomes straight for at least a portion of their length, usually bent at apex; apical cell broadly rounded	*O. CURVICEPS*
5b	Trichomes straight or only very slightly bent, tapering very slightly or not at all toward the apex, apical cell rotundiform	*O. LIMOSA*
6a (1)	Trichome with prominent yellow green color (which however may be variable)	7
6b	Trichome without characteristic yellow green color	12
7a (6)	Trichome up to 2.5 μ wide (broad)	8
7b	Trichome over 2.5 μ wide	11
8a (7)	Trichomes 1-1.5 μ wide	9
8b	Trichomes 2-2.5 μ wide	10
9a (8)	One or two small gas vacuoles per cell; trichome straight, singular	*O. TRICHOIDES*
9b	Cells without gas vacuoles; trichome straight or more or less crooked, singular or few in number, rarely united into "layer"	*O. SUBTILISSIMA*
10a (8)	Cells without large gas vacuoles; trichomes coiled	*O. MINIMA*
10b	Cells with large lobed gas vacuoles; trichomes bent or not coiled	*O. LAUTERBORNII*
11a (7)	Cells 4 to 7 times longer than broad	*O. PUTRIDA*
11b	Cells shorter	*O. CHLORINA*
12a (6)	Trichome at the ends or even over longer distance spiraled	*O. TEREBRIFORMIS*

12b Trichome at the ends not spiraled or only hooked or bent 13

13a (12) Trichome not prominently attenuated at ends 14

13b Trichome prominently attenuated at the ends 28

14a (13) Cells shorter than broad 15

14b Cells longer than broad 21

15a (14) Cells of trichome with conspicuously constricted crosswalls 16

15b Cells of trichome with crosswalls not conspicuously constricted. 17

16a (15) Trichome 5-7 μ broad ..... *O. LACUSTRIS*

16b Trichome broader ..... *O. CHALYBEA*

17a (15) Trichome broader than 10 μ ..... *O. BORNETI*

17b Trichome narrower than 10 μ 18

≡ 18a (17) Trichome broader than 5 μ (may be 4 μ wide in extreme cases in
2a appendix *O. tenuis*) 19

≡ 18b Trichome narrower than 5 μ ..... *O. PLANCTONICA* I
2b appendix

19a (18) Cell crosswalls not granulated ..... *O. SIMPLICISSIMA* I

19b Cell crosswalls granulated 20

20a (19) Trichomes 4-10 μ wide, apical cells more or less hemispherical with slightly thickened outer membrane; thallus blue green or olive green ..... *O. TENUIS* I

20b Trichomes 6-10 μ broad; end cells rounded and truncated, without calyptra or outer thickening; thallus olive or dark brown or black ..... *O. NIGRA* I

21a (14) Cells of trichome constricted at crosswalls 22

21b Cells of trichome not constricted at crosswalls 26

22a (21) Trichome 1 μ broad ..... *O. NEGLECTA*

22b Trichome over 1 μ broad 23

23a (22) Trichome up to 2.5 μ broad 24

23b Trichome over 2.5 μ broad ..... *O. GEMINATA*

24a (23) Trichomes with cells 2 1/2 to 8 times as long as broad 25

24b Trichomes with cells 1 to 2 times as long as broad .... *O. AMPHIGRANULATA*

25a (24) Cells apparently without granules (gas vacuoles), clearly constricted at cross walls ..... *O. LIMNETICA*

25b Two large granules (gas vacuoles) at cross walls of cells, little constricted at cross walls ..... *O. REDEKEI*

26a (21) Trichome .8-1.2 μ broad ..... *O. ANGUSTA*

26b Trichome 1-2.5 μ broad ..... *O. PSEUDOGEMINATA*

26c Trichome broader 27

27a (26) Cells 2-3 times longer than broad ..... *O. AMPHIBIA*

27b Cells quadratic or up to twice as long as broad ..... *O. GUTTULATA*

28a (13) Cells of trichome constricted at crosswalls 29

28b Cells of trichome not constricted at crosswalls 30

29a (28) End cell capitate ..... *O. AMOENA*

29b End cell more or less conical, attenuated ..... *O. FORMOSA*

29c End cell more or less rounded ..... *O. CHALYBEA*

≡ 30a (28) End cell capitate 31
3a appendix

≡ 30b End cell not capitate 32
3b appendix

31a (30) Cells prominently longer than broad (2-3 X 3-9 μ) .... *O. SPLENDIDA* I

31b Cells prominently shorter than broad (6-8 X 2-4 μ) ... *O. RUBESCENS* I

32a (30) Cells with gas vacuoles ..... *O. AGARDHII* I

32b Cells normally without gas vacuoles ..... *O. BREVIS* I

ILLUSTRATIONS

O. AGARDHII Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 6; Taft and Taft 1971, fig. 613; Cocke 1967, fig. 99a-b; Prescott 1962, pl. 108, fig. 15, 16; Tiffany and Britton 1952, pl. 94, fig. 1082; Nygaard 1945, pl. 1, fig. 5; Huber-Pestalozzi 1938, fig. 190; Frémy 1934, pl. 31, fig. 1; Geitler 1932, fig. 618, 621. PL. 9, FIG. 4

O. AMOENA Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 7; Cocke

1967, fig. 94; Prescott 1962, pl. 109, fig. 2-4; Desikachary 1959, pl. 40, fig. 12; Tiffany and Britton 1952, pl. 93, fig. 1073; Geitler 1932, fig. 603a, 611k; Frémy 1930, fig. 190. PL. 9, FIG. 5

O. AMPHIBIA C. A. Agardh 1827. Whitford and Schumacher 1973, pl. 61, fig. 8; Cocke 1967, fig. 92; Prescott 1962, pl. 109, fig. 6; Desikachary 1959, pl. 37, fig. 6; Frémy 1934, pl. 31, fig. 2; Frémy 1930, fig. 180. PL. 9, FIG. 6

O. AMPHIGRANULATA Van Goor 1918. Lund 1962, fig. 65; Desikachary 1959, pl. 37, fig. 4; Huber-Pestalozzi 1938, fig. 196A; Van Goor 1918, pl. 2, fig. 2. PL. 9, FIG. 7

O. ANGUINA Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 9; Cocke 1967, fig. 79; Prescott 1962, pl. 108, fig. 24; Desikachary 1959, pl. 38, fig. 11; Geitler 1932, fig. 599b; Tilden 1910, pl. 4, fig. 9. PL. 9, FIG. 8

O. ANGUSTA Koppe 1924. (= *Achroonema angustum*). Guarrera *et al.* 1972, pl.5, fig. 12; Prescott 1962, pl. 109, fig. 7. PL. 9, FIG. 9

O. BORNETI Zukal 1894. Prescott 1962, pl. 108, fig. 19-20; Geitler 1960, fig. 10, 33; Geitler 1942, fig. 4, 17; Huber-Pestalozzi 1938, fig. 179; Geitler 1932, fig. 585. PL. 9, FIG. 10

O. BREVIS Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 11; Cocke 1967, fig. 102; Huber-Pestalozzi 1938, fig. 193; Frémy 1934, pl. 31, fig. 9-10; Geitler 1932, fig. 619a; Frémy 1930, fig. 195; Tilden 1910, pl. 4, fig. 32. PL. 9, FIG. 11

O. CHALYBEA Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 12; Taft and Taft 1971, fig. 614; Proschkina-Lavrenko et Makarova 1968, fig. 30, no. 6; Cocke 1967, fig. 88; Prescott 1962, pl. 109, fig. 8, 9; Palmer 1959, pl. 2; Desikachary 1959, pl. 38, fig. 3; Tiffany and Britton 1952, pl. 93, fig. 1071; Frémy 1934, pl. 31, fig. 10; Geitler 1932, fig. 608b; Frémy 1930, fig. 196. PL. 9, FIG. 12

O. CHLORINA Kützing 1843. Whitford and Schumacher 1973, pl. 61, fig. 13; Desikachary 1959, pl. 40, fig. 4; Palmer 1959, pl. 3; Tiffany and Britton 1952, pl. 94, fig. 1088, 1089; Geitler 1932, fig. 9 d-e, 611c; Frémy 1930, fig. 183. PL. 9, FIG. 13

O. CURVICEPS C. A. Agardh 1824. (= *Oscillatoria limosa* according to Fjerdingstad 1971). Whitford and Schumacher 1973, pl. 61, fig. 14; Cocke 1967, fig. 78; Prescott 1962, pl. 108, fig. 17, 18; Desikachary 1959, pl. 38, fig. 2; Tiffany and Britton 1952, pl. 94, fig. 1081; Thompson 1938, pl. 1, fig. 16; Frémy 1934, pl. 30, fig. 5; Geitler 1932, fig. 598. PL. 9, FIG. 14

O. FORMOSA Bory 1827. Whitford and Schumacher 1973, pl. 61, fig. 15; Cocke 1967, fig. 95; Prescott 1962, pl. 109, fig. 10, 11; Desikachary 1959, pl. 40, fig. 15; Tiffany and Britton 1952, pl. 94, fig. 1084; Smith 1950, fig. 487A; Frémy 1934, pl. 31, fig. 11; Geitler 1932, fig. 619b; Frémy 1930, fig. 197. PL. 9, FIG. 15

O. GEMINATA Meneghini 1837. Whitford & Schumacher 1973, pl. 61, fig. 16; Proschkina-Lavrenko et Makarova 1968, fig. 30, no. 7; Cocke 1967, fig. 93; Tiffany and Britton 1952, pl. 94, fig. 1087; Geitler 1932, fig. 611i. PL. 9, FIG. 16

O. GUTTULATA (GUTTULA) Van Goor 1918, pl. 2, fig. 1 a-c. Thompson 1938, pl. 1, fig. 21; Huber-Pestalozzi 1938, fig. 196B. PL. 9, FIG. 17

O. LACUSTRIS Geitler 1925a (= *Trichodesmium lacustre*). Whitford and Schumacher 1973, pl. 61, fig. 17; Taft and Taft 1971, fig. 615; Cocke 1967, fig. 87; Prescott 1962, pl. 109, fig. 15; Desikachary 1959, pl. 42, fig. 22; Mabille 1956, fig. 10; Nygaard 1945, fig. 11; Huber-Pestalozzi 1938, fig. 176; Geitler 1932, fig. 9a. PL. 9, FIG. 18

O. LAUTERBORNII Schmidle 1901. Palmer 1959, pl. 3; Elenkin 1949, fig. 390b; Geitler 1932, fig. 9c. PL. 9, FIG. 19

O. LIMNETICA Lemmermann 1900. Guarrera *et al.* 1972, pl. 5, fig. 6; Halperin 1967, pl. 6, fig. 2; Prescott 1962, pl. 109, fig. 16; Desikachary

1959, pl. 37, fig. 3; Nygaard 1945, pl. 1, fig. 14; Huber-Pestalozzi 1938, fig. 183; Frémy 1934, pl. 31, fig. 3; Geitler 1932, fig. 611 *l*, 612 b; Frémy 1930, fig. 189. PL. 9, FIG. @)

O. LIMOSA C. A. Agardh 1812. Whitford and Schumacher 1973, pl. 61, fig. 18; Fjerdingstad 1971, fig. 10; Taft and Taft 1971, fig. 616; Bourrelly 1970, pl. 126, fig. 10; Proschkina-Lavrenko et Makarova 1968, fig. 30, no. 4; Prescott 1962, pl. 109, fig. 17; Desikachary 1959, pl. 42, fig. 11; Fott 1959, fig. 13_3; Palmer 1959, fig. 30; Tiffany and Britton 1952, pl. 93, fig. 1076; Smith 1950, fig. 487B; Geitler 1942, fig. 151 A_1; Huber-Pestalozzi 1938, fig. 174; Frémy 1934, pl. 30, fig. 4; Geitler 1932, fig. 598d. PL. 10, FIG. 1

O. MINIMA Gicklhorn 1921. Guarrera *et al.* 1972, pl. 5, fig. 7; Prescott 1962, pl. 107, fig. 24; Geitler 1932, fig. 604. PL. 10, FIG. @

O. NEGLECTA Lemmermann 1910. No illustrations found.

O. NIGRA Vaucher 1803. Whitford and Schumacher 1973, pl. 61, fig. 21; Cocke 1967, fig. 90; Prescott 1962, pl. 109, fig. 18; Woller 1887, pl. 206, fig. 20. PL. 10, FIG. 3

O. PLANCTONICA Woloszyńska 1912. Huber-Pestalozzi 1938, fig. 182. PL. 10, FIG. 4

O. PRINCEPS Vaucher 1803. Whitford and Schumacher 1973, pl. 61, fig. 24; Taft and Taft 1971, fig. 617; Proschkina-Lavrenko et Makarova 1968, fig. 30, no. 5; Cocke 1967, fig. 77; Prescott 1962, pl. 110, fig. 1; Palmer 1959, pl. 2 and fig. 32; Desikachary 1959, pl. 37, fig. 1, 10, 11, 13, 14; Tiffany and Britton 1952, pl. 93, fig. 1080; Smith 1950, fig. 448c; Huber-Pestalozzi 1938, fig. 175; Geitler 1932, fig. 598a, 601g; Frémy 1930, fig. 175. PL. 10, FIG. 5

O. PSEUDOGEMINATA G. Schmid 1914. Desikachary 1959, pl. 41, fig. 10; Geitler 1932, fig. 616; Schmid 1914, fig. 4. PL. 10, FIG. 6

O. PUTRIDA Schmidle 1901. Palmer 1959, pl. 3; Geitler 1932, fig. 9b; Frémy 1930, fig. 181. PL. 10, FIG. 7

O. REDEKEI Van Goor 1918. Skuja 1956, pl. 6, fig. 20; Huber-Pestalozzi 1938, fig. 184; Van Goor 1918, pl. 2, fig. 3a-e. PL. 10, FIG. 8

O. RUBESCENS De Candolle 1825. Bourrelly 1970, pl. 126, fig. 3-7; Prescott 1962, pl. 107, fig. 21; Desikachary 1959, pl. 42, fig. 12; Huber-Pestalozzi 1938, fig. 188; Geitler 1932, fig. 620a-b; Gomont 1892, pl. 6, fig. 6, 7. PL. 10, FIG. 9

O. SANCTA Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 27; Bourrelly 1970, pl. 126, fig. 9; Proschkina-Lavrenko et Makarova 1968, fig. 30, no. 3; Cocke 1967, fig. 75; Prescott 1962, pl. 110, fig. 4; Geitler 1960, fig. 1a; Desikachary 1959, pl. 42, fig. 10; Skuja 1956, pl. 5, fig. 21-22; Tiffany and Britton 1952, pl. 93, fig. 1078; Geitler 1942, fig. 1a; Thompson 1938, pl. 1, fig. 18; Huber-Pestalozzi 1938, fig. 172; Geitler 1932, fig. 598c; Frémy 1929, fig. 177. PL. 10, FIG. 10

O. SIMPLICISSIMA Gomont 1892. Gomont 1892, pl. 7, fig. 1. PL. 10, FIG. 11

O. SPLENDIDA Greville 1824. Whitford and Schumacher 1973, pl. 61, fig. 28; Taft and Taft 1971, fig. 619; Cocke 1967, fig. 97a-b; Prescott 1962, pl. 110, fig. 5-7; Palmer 1959, pl. 2; Desikachary k959, pl. 37, fig. 7, 8, pl. 38, fig. 10, pl. 40, fig. 11; Tiffany and Britton 1952, pl. 94, fig. 1085, 1086; Smith 1950, fig. 487c; Huber-Pestalozzi 1938, fig. 187; Frémy 1934, pl. 31, fig. 5; Geitler 1932, fig. 611 m-o, 620 d-f; Frémy 1930, fig. 191. PL. 10, FIG. 12

O. SUBTILISSIMA Kützing 1846. Whitford and Schumacher 1973, pl. 61, fig. 29; Cocke 1967, fig. 82; Wolle 1887, pl. 206, fig. 1. PL. 10, FIG. 13

O. TENUIS C. A. Agardh 1813. Whitford and Schumacher 1973, pl. 61, fig. 31; Taft and Taft 1971, fig. 620; Cocke 1967, fig. 89a-b; Prescott 1962, pl. 110, fig. 8, 9, 14; Geitler 1960, fig. 3 a-c, 6f; Palmer 1959, fig. 31; Desikachary 1959, pl. 42, fig. 15; Van Meel 1954, pl. 73, fig. 5; Tiffany and Britton 1952, pl. 93, fig. 1074; Huber-Pestalozzi 1938, fig. 180; Frémy 1934, pl. 30, fig. 10; Geitler 1932, fig. 611f-g; Frémy 1930, fig. 186. PL. 10, FIG. 14

O. TEREBRIFORMIS C. A. Agardh 1827. Prescott 1962, pl. 107, fig. 25, 26; Desikachary 1959, pl. 38, fig. 16; Geitler 1932, fig. 607d; Tilden 1910, pl. 4, fig. 39. PL. 10, FIG. 15

O. TRICHOIDES Szafer 1910. Desikachary 1959, pl. 41, fig. 13; Szafer 1910, pl. 6, fig. 2. PL. 10, FIG. 16

PHORMIDIUM Kützing 1843

Phormidium is worthy of high consideration in any aquatic ecology study involving microorganisms because it contains many species that are highly diagnostic of many ecological or water quality situations. Among the blue green algae, this genus is second only to *Oscillatoria* in the number of important indicative species; however, unlike the species of *Oscillatoria*, the species of *Phormidium* vary through almost the entire range of spectral ecological characteristics. Some individual species (such as *Phormidium autumnale)* are reported to range widely in nutrient and other ecological characteristics which vary from: katharobic to polysaprobic or saprobiontic (saprobian spectrum); oligotrophic to eutrophic (nutrient spectrum); rheophilous to limnophilous (current spectrum); and, periphytic on trees to planktonic (habitat spectrum). It also has wide salt tolerance and is euryhaline. On the other hand, there are several species which seem to be diagnostic of certain levels of organic nutrients (such as *Phormidium uncinatum* which is saprophilous or α mesosaprobic and *P. laminosum* which is katharobic or saprophobic).

KEY TO SPECIES

≡ 1a Cells of trichome with constricted cell walls 2
2a appendix

≡ 1b Cells of trichome without or with slightly constricted cell walls 4
2b appendix

2a (1) Trichome .6-.8 μ broad ..... *P. ANGUSTISSIMUM* I

2b Trichome broader 3

3a (2) Trichome 1.5-2 μ broad ..... *P. FOVEOLARUM* I

3b Trichome 2-3.5 μ broad ..... *P. MOLLE* I

4a (1) Trichome up to 3 μ broad 5

4b Trichome broader than 3 μ 7

5a (4) End cell more or less cuspidate or conical 6

5b End cell not cuspidate or conical ..... *P. LURIDUM* I

6a (5) End straight or not hooked or curved ..... *P. TENUE* I

6b End hooked or curved ..... *P. LAMINOSUM* I

7a (4) Trichome not attenuated 8

7b Trichome attenuated 9

8a (7) End cell truncated ..... *P. RETZII* I

8b End cell more or less rounded ..... *P. AMBIGUUM* I

9a (7) End cell not capitate 10

9b End cell capitate 13

10a (9) Matrix, mass or "layer" with calcareous incrustation .....
..... *P. INCRUSTATUM* I

10b Matrix, mass or "layer" without calcareous incrustation 11

11a (10) Cells mostly shorter than wide, 2-4 μ long, not granulated at ..
cross walls; trichome curved ..... *P. PAPYRACEUM* I

11b Cells almost quadratic or longer than wide, 4-8 μ long,
granulated at the cross walls; trichome more or less straight .. 12

12a (11) Matrix, mass, or "layer" dark blue green, membraneous;
trichomes with thin sheaths ..... *P. INUNDATUM* I

12b Matrix, mass, or "layer" bright blue green. leathery and
laminated; trichomes with thick sheaths ..... *P. FONTICOLA* I

13a (9) End cell pointed or conical ..... *P. SUBFUSCUM* I

13b End cell truncate-conical or rounded 14

14a (13) Trichome straight ..... *P. FAVOSUM* I

14b Trichome bent 15

15a (14) Cells 5.5-9 μ wide, usually 2-3 times wider than long. *P. UNCINATUM* I

15b Cells 4-7 μ wide, usually 1-2 times wider than long .. *P. AUTUMNALE* I

ILLUSTRATIONS

P. AMBIGUUM Gomont 1892. Cocke 1967, fig. 117; Prescott 1962, pl. 111, fig. 1; Desikachary 1959, pl. 44, fig. 16, pl. 45, fig. 5-8; Tiffany and Britton 1952, pl. 95, fig. 1104; Fremy 1934, pl. 24, fig. 1; Geitler 1932, fig. 647e; Fremy 1929, fig. 137. PL. 10, FIG. 17

P. ANGUSTISSIMUM W. *et* G. S. West 1897. Whitford and Schumacher 1973, pl. 61, fig. 32; Cocke 1967, fig. 103. PL. 10, FIG. 18

P. AUTUMNALE Gomont 1893. (= *Oscillatoria antliaria, Phormidium antliaria)* Whitford and Schumacher 1973, pl. 61, fig. 33; Hollerbakh et Schtina 1969, fig. 5, no. 11; Cocke 1967, fig. 121; Prescott 1962, pl. 107, fig. 19-20; Palmer 1959, pl. 3; Fott 1959, fig. 13_5; Desikachary 1959, pl. 44, fig. 24, 25; Tiffany and Britton 1952, pl. 96, fig. 1108; Smith 1950, fig. 490; Frémy 1934, pl. 24, fig. 4; Geitler 1932, fig. 652k-l, 653a; Frémy 1930, fig. 143; Tilden 1910, pl. 5, fig. 18, 19. PL. 10, FIG. 19

P. FAVOSUM Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 36; Cocke 1967, fig. 119; Prescott 1962, pl. 111, fig. 2; Desikachary 1959, pl. 44, fig. 20, 21, Tiffany and Britton 1952, pl. 95, fig. 1102, 1103; Frémy 1934, pl. 24, fig. 3; Geitler 1932, fig. 652a-b; Frémy 1930, fig. 140; Tilden 1910, pl. 5, fig. 9, 10. PL. 10, FIG. 20

P. FONTICOLA Kützing 1845. Kützing 1845-1849, pl. 45, fig. V

P. FOVEOLARUM Gomont 1892. Tiffany and Britton 1952, pl. 95, fig. 1095; Geitler 1932, fig. 636 b; Frémy 1930, fig. 121; Tilden 1910, pl. 4, fig. 54; Gomont 1892, pl. 4, fig. 16. PL. 10, FIG. 21

P. INCRUSTATUM Gomont *in* Bornet *et* Flahault 1889. Fott 1959, fig. 5; Desikachary 1959, pl. 44, fig. 12; Geitler 1932, fig. 649a; Tilden 1910, pl. 4, fig. 68. PL. 10, FIG. 22

P. INUNDATUM Kützing 1849. Whitford and Schumacher 1973, pl. 61, fig. 38; Cocke 1967, fig. 110; Prescott 1962, pl. 107, fig. 15, pl. 111, fig. 3; Tiffany and Britton 1952, pl. 95, fig. 1100, 1101; Geitler 1932, fig. 649e; Frémy 1930, fig. 132. PL. 10, FIG. 23

P. LAMINOSUM Gomont 1890. Desikachary 1959, pl. 44, fig. 6; Frémy 1934, pl. 23, fig. 3; Geitler 1932, fig. 642c; Frémy 1930, fig. 130; Tilden 1910, pl. 4, fig. 62. PL. 10, FIG. 24

P. LURIDUM Gomont 1892. Welch 1964, fig. 47, 48; Geitler 1932, fig. 645a; Frémy 1930, fig. 127; Tilden 1910, pl. 4, fig. 56, 57; Gomont 1892, pl. 4, fig. 17-18. PL. 10, FIG. 25

P. MOLLE Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 38; Cocke 1967, fig. 105; Desikachary 1959, pl. 59, fig. 8; Frémy 1934, pl. 22, fig. 5; Frémy 1930, fig. 119. PL. 10, FIG. 26

P. PAPYRACEUM Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 39; Cocke 1967, fig. 112; Frémy 1934, pl. 23, fig. 7; Geitler 1932, fig. 650a-b; Frémy 1930, fig. 134; Tilden 1910, pl. 4, fig. 73, 74. PL. 10, FIG. 27

P. RETZII Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 40; Taft and Taft 1971, fig. 621; Cocke 1967, fig. 116; Prescott 1962, pl. 111, fig. 6; Geitler 1960, fig. 4; Desikachary 1959, pl. 44, fig. 13, 15; Tiffany and Britton 1952, pl. 95, fig. 1105-1107; Geitler 1932, fig. 647; Frémy 1930, fig. 135; Tilden 1910, pl. 5, fig. 1-4. PL. 11, FIG. 1

P. SUBFUSCUM Kutzing 1843. Whitford and Schumacher 1973, pl. 61, fig. 41; Taft and Taft 1971, fig. 622; Cocke 1967, fig. 120; Prescott 1962, pl. 107, fig. 16; Desikachary 1959, pl. 44, fig. 22, 23; Tiffany and Britton 1952, pl. 95, fig. 1096, 1097; Frémy 1934, pl. 23, fig. 8; Geitler 1932, fig. 652d-g; Frémy 1930, fig. 141; Tilden 1910, pl. 5, fig. 12-15. PL. 11, FIG. 2

P. TENUE Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 42; Cocke 1967, fig. 107; Prescott 1962, pl. 111, fig. 7; Desikachary 1959, pl. 43, fig. 13-15, pl. 44, fig. 7-9; Tiffany and Britton 1952, pl. 95, fig. 1098; Thompson 1938, pl. 1, fig. 24; Frémy 1934, pl. 23, fig. 4; Geitler 1932, fig. 642d-e; Frémy 1930, fig. 131; Tilden 1910, pl. 4, fig. 63-65. PL. 11; FIG. 3

P. UNCINATUM Gomont 1890. Whitford and Schumacher 1973, pl. 61, fig. 44; Cocke 1967, fig. 122; Prescott 1962, pl. 107, fig. 18; Palmer 1959, pl. 6, and fig. 33; Desikachary 1959, pl. 43, fig. 1, 2, pl. 45, fig. 9, 10; Tiffany and Britton 1952, pl. 94, fig. 1091, 1092; Frémy 1934, pl. 24, fig. 5; Geitler 1932, fig. 652 h-i; Frémy 1930, fig. 142; Tilden 1910, pl. 5, fig. 16, 17. PL. 11, FIG. 4

PLECTONEMA Thuret 1875

This genus apparently has little to offer us concerning water quality appraisal. Much more investigation is needed on the field ecology of this genus.

DESCRIPTION OF SPECIES

Stratum slender, often broadly diffuse, pale blue-, yellow- or gray-green, mostly slimy; filaments 2-4 μ broad, branching sparse; cells 1-3 times longer than broad, litht blue-green; sheath thin, mostly colorless ..... *P. GRACILLIMUM*

Filament 2-4 μ in diameter, straight or slightly bent, sparsely to frequently branched (branches solitary), occurring in the mucilage of other blue green algae or as small gelatinous masses; cells cylindrical and quadratic or slightly longer than broad, often separated from each other, .7-1.5 μ broad, 2-3 μ long; cross wall usually weakly constricted, without granules; end cell rounded; sheaths thin and colorless ..... *P. NOSTOCORUM*

ILLUSTRATIONS

P. GRACILLIMUM Hansgirg 1885. (= *Glaucothrix gracillima*). Cocke 1967, fig. 261; Hansgirg 1885, pl. 1. PL. 11, FIG. 5

P. NOSTOCORUM Bornet *in* Bornet et Thuret 1880. Whitford and Schumacher 1973, pl. 64, fig. 9; Cocke 1967, fig. 260; Prescott 1962, pl. 126, fig. 4, 5; Desikachary 1959, pl. 83, fig. 7; Tiffany and Britton 1952, pl. 102, fig. 1157; Frémy 1934, pl. 25, fig. 2; Geitler 1932, fig. 445; Frémy 1930, fig. 149; Tilden 1910, pl. 11, fig. 7. PL. 11, FIG. 6

PSEUDANABAENA Lauterborn 1914-1917

The species included in this work show a greater affinity for enriched waters than for nutrient poor waters. *Pseudanabaena catenata* is probably a saprobiont. Considering the small number of species in this genus, it is striking that as many as two species have good nutrient enrichment indicating possibilities. As a genus *Pseudanabaena* could prove to be a valuable indicator; however, somewhat more investigation should be conducted.

KEY TO SPECIES

1a Cells 2-7 μ long; gas vacuoles at transverse walls ... *P. GALEATA*

1b Cells about 3 μ long; gas vacuoles inconspicuous, rare, or in other positions ..... *P. CATENATA*

ILLUSTRATIONS

P. CATENATA Lauterborn 1916. Guarrera *et al.* 1972, pl. 5, fig. 10 a-b; Bourrelly 1970, pl. 128, fig. 11-12; Geitler 1932, fig. 596a; Geitler 1925a, fig. 416. PL. 11, FIG. 7

P. GALEATA Böcher 1949. Böcher 1949, fig. 4 a-g. PL. 11, FIG. 8

RHABDODERMA Schmidle et Lauterborn *in* Schmidle 1900

Both of the species listed in this report are eutrophic.

KEY TO SPECIES

1a Cells 5 μ long or longer ..... *R. SIGMOIDEA*

1b Cells shorter than 5 μ ..... *R. MINIMA*

ILLUSTRATIONS

R. MINIMA Lemmermann 1908. Huber-Pestalozzi 1938, fig. 61B; Geitler 1932, fig. 135e; Lemmermann 1908, pl. 5, fig. 29. PL. 11, FIG. 9

R. SIGMOIDEA Moore et Carter 1923. Huber-Pestalozzi 1938, fig. 61A; Geitler 1932, fig. 135f. PL. 11, FIG. 10

RIVULARIA C. A. Agardh 1824

For a genus as large as *Rivularia* it is remarkable that diagnostic

ecological data on nutrient enrichment is so meager. This is probably due mainly to lack of detailed ecological study and evaluation rather than an actual lack of potential indicators. Fjerdingstad (1964) implied a katharobic tendency for *Rivularia rufescens*. The genus is often quite important in periphytic communities.

Rivularia rufescens (Nageli *in* Kützing 1849) (= *Euactis rufescens*). Layer hemispherical, later flowing together and diffusing, crusted with lime up to 1 1/2 cm. high. Trichomes 8-12 μ broad; cells almost quadratic or shorter than broad. Heterocyst elongated. ILLUSTRATIONS - Kützing 1850-1852 (1852), pl. 80, fig. 2. PL. 11, FIG. 11

SCHIZOTHRIX Kützing 1843

Even though this genus has a very large number of species, comparatively little is known about their ecology and water quality indicating value. At least three species are known to be favored by low nutrient content (Fjerdingstad 1964). Patrick *et al.* (1969) assigned a pollution tolerant status to *Schizothrix calcicola*; however, there is little in the literature to indicate its exact position in the saprobian spectrum (when interpreted as *sensu stricto*). Most species are plentiful as periphyton under low nutrient conditions. *S. calcicola* is probably no higher in nutrient toleration than saproxenous.

DESCRIPTION OF SPECIES

Stratum more or less slimy and membranous, without calcareous incrustations, originally thin and bright blue-green, later more thick and leathery-fleshy, dark to blackish blue-green or yellowish gray; filaments very densely entangled, little branched; sheath colorless, compact, cuspidate or funnel-shaped at ends, often with only one trichome, sometimes two or more trichomes, originally somewhat narrow, later wider and faintly laminated with ragged exterior; cells not constricted at the cross walls, 1-1.7 μ broad, 2-6 μ long, pale blue-green ..... *S. CALCICOLA*

Stratum crusty with irregular or warty exterior and with calcareous incrustations, often stony, blue-green, pinkish or brown; filaments bent or curved, entangled, greatly branched, expanding and forked above but

narrower toward base of plant, fasciculate at ends with more or less parallel branching; sheath moderately thick, colorless or rarely brownish, acuminated at end, with only a single trichome at end; cells with constricted cross walls, 1.25-3 μ long, pale blue-green or dirty-green; end cell cone-shaped ..... *S. FASCICULATA*

Filaments united to form a pulvinate mass, expanded with trichomes more abundant above than in basal portion, branched and contorted above, without calcareous incrustations; sheaths colorless or yellow and thick with affinity for chlor-zinc-iodide reagent producing violet color; cells longer than broad, 1-1.5 μ broad, up to 4 μ long ..... *S. LACUSTRIS*

Thallus cushion-shaped with conspicuous calcareous incrustations, exterior irregular or warty, blue-green; filaments parallel, more or less straight, closely compacted with sparse branching and with closely adpressed branches; sheath colorless, pointed at ends with many trichomes in each sheath, sheath stained violet by chlor-zinc-iodide; cells quadrate, up to 2 times longer than broad, 1-2 μ broad, with constricted cross walls, blue-green, end cells rounded ..... *S. PULVINATA*

KEY TO SPECIES

1a	Plants subaerial or aerial (facultatively aquatic), filaments prostrate and intertwined, contorted	*S. CALCICOLA*
1b	Plants aquatic, filaments growing upright and parallel from the base	2
2a (1)	Matrix ("layer") or thallus conspicuously calcified	3
2b	Matrix ("layer") or thallus not or only slightly calcified (crusted with lime) or calcified at lower portions .	*S. LACUSTRIS*
3a (2)	Trichome 1-3 μ broad, filaments prominently branched, fasciculate	*S. FASCICULATA*
3b	Trichome 1-2 μ wide, filaments little branched and not fasciculate	*S. PULVINATA*

ILLUSTRATIONS

S. CALCICOLA Gomont 1892. (= *Hypheothrix calcicola*). Whitford and Schumacher 1973, pl. 61, fig. 77; Drouet 1968, fig. 8-19 (*sensu lato*); Tiffany and Britton 1952, pl. 97, fig. 1118, 1119; Geitler

1942, fig. 144; Geitler 1932, fig. 692; Tilden 1910, pl. 6, fig. 1; Gomont 1892, pl. 8, fig. 1-3. PL. 11, FIG. 12

S. FASCICULATA Gomont 1892. (= *Inactis fasciculata*). Elenkin 1949, fig. 509; Geitler 1942, fig. 140B; Geitler 1932, fig. 695a; Tilden 1910, pl. 6, fig. 14, 15; Gomont 1892, pl. 6, fig. 1-3. PL. 11, FIG. 13

S. LACUSTRIS Braun *in* Kützing 1848. (= *Inactis lacustris*). Prescott 1962, pl. 131, fig. 6; Desikachary 1959, pl. 56, fig. 6, 10; Frémy 1934, pl. 20, fig. 4; Geitler 1932, fig. 698, 699; Frémy 1930, fig. 92; Tilden 1910, pl. 6, fig. 16. PL. 11, FIG. 14

S. PULVINATA Gomont 1892. (= *Inactis pulvinata*). Elenkin 1949, fig. 508; Tilden 1910, pl. 6, fig. 11-13. PL. 11, FIG. 15; PL. 12, FIG. 1

SCOPULONEMA Ercegović 1930

The members of this genus have little diagnostic value in determining water quality. *Scopulonema minus*, for instance, occurs under a wide variety of nutrient conditions.

Scopulonema minus Geitler 1942. (= *Pleurocapsa minor*). Cells 3-9 μ broad, often asymmetrical, end cell frequently elongated and bent, up to 3 times as long as wide. Growth habit highly variable - parenchymatous. Membrane colorless. ILLUSTRATIONS - Friedrich 1973, pl. 5, fig. h; Fott 1959, fig. 9e,f; Geitler 1942, fig. 62 a-e; Geitler 1932, fig. 182-185. PL. 12, FIG. 2

SCYTONEMA C. A. Agardh 1824

It is striking to note that such a prominent genus as this has so little known about it with respect to ecology and nutrient tolerance. Both *Scytonema crustaceum* and *S. ocellatum* seem to be favored by nutrient poor waters.

DESCRIPTION OF SPECIES

Plant black or dark brown, crusty; filaments 15-22 μ broad, prostrate at the base, ascending at the ends, mostly short, densely compacted, profuse

and repeated branching; sheath yellow-brown to dark brown with distinct layering; cells 6-12 μ broad, mostly conspicuously shortened or at least slightly longer than broad, barrel-shaped, blue-green or olive-green; heterocysts flattened, globular to discoid ..... *S. CRUSTACEUM*

Stratum cushion shaped, blackish or grayish-blue; filaments 10-19 μ broad, up to 3000 μ long, entangled, branches shortened; sheath firm, brown, layered; cells 6-14 μ broad, olive-green, quadratic or shorter than long; heterocysts almost quadratic to cylindrical ..... *S. OCELLATUM*

ILLUSTRATIONS

S. CRUSTACEUM C. A. Agardh 1824. Cocke 1967, fig. 240; Geitler 1960, fig. 88 d, e; Desikachary 1959, pl. 99, fig. 1; Geitler 1932, fig. 504, 1, 3-6; Frémy 1930, fig. 271; Tilden 1910, pl. 13, fig. 10-12. PL. 12, FIG. 3

S. OCELLATUM Bornet et Flahault 1887. Whitford and Schumacher 1973, pl. 63, fig. 3; Cocke 1967, fig. 230; Desikachary 1959, pl. 92, fig. 3; Frémy 1934, pl. 53, fig. 3; Geitler 1932, fig. 488; Frémy 1930, fig. 263. PL. 12, FIG. 4

SPIRULINA Turpin 1827

Representatives of this genus are found in a wide variety of ecological conditions. Most species encountered in this study seem to favor polluted or high nutrient situations, especially *Spirulina jenneri* which is a diagnostic saprobiont.

KEY TO SPECIES

1a	Large forms with visible cross walls	2
1b	Mostly small forms apparently without visible cross walls	3
2a (1)	Spirals of trichome 9-16 μ wide	*S. JENNERI*
2b	Spirals of trichome 20-36 μ wide	*S. PLATENSIS*
3a (1)	Trichome colorless (rare)	*S. ALBIDA*
3b	Trichome mostly blue-green or pale	*S. SUBSALSA*

ILLUSTRATIONS

S. ALBIDA Kolkwitz 1909. No illustration found.

S. JENNERI Geitler 1925a. (= *Arthrospira jenneri*). Whitford and Schumacher 1973, pl. 61, fig. 4a; Prescott 1962, pl. 108, fig. 22, 23; Geitler 1960, fig. 6 a-b; Fott 1959, fig. 13$_4$; Palmer 1959, pl. 3; Desikachary 1959, pl. 35, fig. 3; Tiffany and Britton 1952, pl. 97, fig. 1123; Geitler 1942, fig. 2a-b; Huber-Pestalozzi 1938, fig. 157; Geitler 1932, fig. 590 c; Frémy 1930, fig. 204. PL. 12, FIG. 5

S. PLATENSIS Geitler 1925a. (= *Arthrospira platensis*). Desikachary 1959, pl. 35, fig. 2; Van Meel 1954, pl. 70, fig. 26-28; Geitler 1942, fig. 154; Huber-Pestalozzi 1938, fig. 156, 159; Geitler 1932, fig. 589, 590d; Gomont 1892, pl. 7, fig. 27. PL. 12, FIG. 6

S. SUBSALSA Örsted 1842. Whitford and Schumacher 1973, pl. 61, fig. 1; Guarrera *et al.* 1972, pl. 5, fig. 2; Drouet 1968, fig. 1-7 (*sensu lato*); Prescott 1962, pl. 108, fig. 14; Desikachary 1959, pl. 36, fig. 3, 9; Huber-Pestalozzi 1938, fig. 161; Frémy 1934, pl. 31, fig. 23; Geitler 1932, fig. 593a; Frémy 1930, fig. 211. PL. 12, FIG. 7

STIGONEMA C. A. Agardh 1824

Most representatives of this genus are not known for being tolerant of high nutrient conditions. *Stigonema informe* and *S. mesentericum* probably are good katharobic (saprophobic) indicators.

DESCRIPTION OF SPECIES

Thallus expanded, caespitose, crusty, occasionally as a solitary filament, blackish or brownish; trichome with 4-6 rows of cells; filaments about 1000-2000 μ long, 40-70 μ broad, prostrate below and erect above, branches straight or bent, branching irregular, secondary branches usually arising from upper surface and forming hormogonia; hormogonia about 18 μ broad and about 45-50 μ long, solitary or in series; heterocysts lateral ..... *S. INFORME*

Thallus gelatinous, cushion-like; filaments 25-35 μ wide with short,

broad and irrecular branches composed of ellipsoidal ovate or globose cells in a more or less random pattern, main axis with small groups of cells forming irregular lobes; sheath thick and laminated; cells 6-12 μ in diameter; heterocysts compressed globose ..... *S. MESENTERICUM*

ILLUSTRATIONS

S. INFORME Kützing 1849. (= *Sirosiphon coralloides*). Whitford and Schumacher 1973, pl. 66, fig. 1; Cocke 1967, fig. 290; Fott 1959, fig. 10 $_1$; Desikachary 1959, pl. 137, fig. 2; Geitler 1932, fig. 326; Frémy 1930, fig. 333; Tilden 1910, pl. 15, fig. 21; Wolle 1887, pl. 191, fig. 21, pl. 192, fig. 9-12. PL. 12, FIG. 8

S. MESENTERICUM Geitler 1925a. Whitford and Schumacher 1973, pl. 65, fig. 10; Cocke 1967, fig. 285; Prescott 1962, pl. 130, fig. 4; Desikachary 1959, pl. 134, fig. 5-7; Geitler 1932, fig. 308; Geitler 1925a, fig. 223. PL. 12, FIG. 9

SYMPLOCA Kützing 1843

Much is left to be investigated with respect to the nutrient indicating status of this genus. *Symploca muralis* may have value as an indicator of katharobic waters; *S. erecta* indicates copper pollution.

DESCRIPTION OF SPECIES

Stratum widely diffuse or prostrate with upright lobes up to 4000 μ long, olive green, densely compacted, creeping or decumbent in a winding pattern at the base; sheath thin and not stained violet by chlor-zinc-iodide reagent; trichome blue-green, 2.7-3 μ broad; cells not constricted at the cross walls, usually slightly longer than broad, 3.5-4 μ long; end cell rounded, without calyptra ..... *S. ERECTA*

Thallus expanded broadly, caespitose, deep gray in color; erect fascicles (lobes) up to 2000 μ high, apiculate; filaments elongated, decumbent at bases, compacted and greatly entangled; sheath firm and thin; trichomes 3-4 μ broad; cells 1.5-4 μ in length, cross walls inconspicuous and not constricted, apparently granulated, blue-green; apical cells obtuse conical ..... *S. MURALIS*

ILLUSTRATIONS

S. ERECTA Pevalek 1916. No illustration found.

S. MURALIS Kützing 1843. Whitford and Schumacher 1973, pl. 61, fig. 65; Cocke 1967, fig. 152; Palmer 1959, fig. 14; Geitler 1932, fig. 732; Frémy 1930, fig. 113; Tilden 1910, pl. 5, fig. 53; Gomont 1892, pl. 11, fig. 10. PL. 12, FIG. 10

TETRARCUS Skuja 1932

Very little is known about the ecology of this genus. *Tetrarcus ilsteri* is associated with dystrophic waters. Apparently it is diagnostic of dystrophic waters.

Tetrarcus ilsteri Skuja 1932. Cells 1-1.5 μ broad, 2.5-4 μ long, 2-4 together in ring-shaped groups; layer or matrix 150 μ across. ILLUSTRATIONS. Geitler 1960, fig. 35c, d; Geitler 1942, fig. 29c, d; Huber-Pestalozzi 1938, fig. 67B; Skuja 1932, fig. 45-46. PL. 12, FIG. 11

TOLYPOTHRIX Kützing 1843

This genus is not of proven value in water quality appraisal. However, evidence is accumulating to show that *Tolypothrix lanata* and other species of this genus have potential value as indicators of acidic waters with a low nutrient level. Much more study and observation is needed on the ecology of the species of this genus.

Tolypothrix lanata Wartmann *in* Rabenhorst 1858. Trichomes 9-13 μ in diameter, branches long and profuse. Cells cylindrical to quadratic, longer than wide, 8-10 μ wide and 10-12 μ long. Heterocysts subovate or sub-cylindrical, about 6-8 μ in diameter, 8-11 μ long. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 64, fig. 1; Cocke 1967, fig. 244; Prescott 1962, pl. 125, fig. 7; Geitler 1960, fig. 26; Geitler 1932, fig. 459d; Tilden 1910, pl. 14, fig. 1. PL. 12, FIG. 12

PLATES

PLATE 1

Figure

1. *Amphithrix janthina* Bornet et Flahault 1885, X 750 (after Prescott 1962).
2. *Anabaena circinalis* Rabenhorst 1852, X 525 (after Prescott 1962).
3. *Anabaena constricta* Geitler 1925a, ca.* X 500 (after Geitler 1932).
4. *Anabaena cylindrica* Lemmermann 1896, ca. X 500 (after Geitler 1932).
5. *Anabaena flosaquae* De Brebisson *in* De Brebisson et Godey 1836, X 750 (after Prescott 1962).
6. *Anabaena inaequalis* Bornet et Flahault 1888, X 1350 (after Prescott 1962).
7. *Anabaena macrospora* Klebahn 1895, A = X 1200; B-C = X 1730 (after Prescott 1962).
8. *Anabaena oscillarioides* Bory 1822, A-C = X 750; D = mature spore with punctate wall, X 625 (after Prescott 1962).
9. *Anabaena planctonica* Brunnthaler 1903, A-B = X 900; C = 1500 (after Prescott 1962).
10. *Anabaena spiroides* Klebahn 1895, X 600 (after Huber-Pestalozzi 1938).
11. *Anabaena torulosa* Lagerheim 1883, X 375 (after Geitler 1932).
12. *Anabaenopsis tanganyikae* Woloszynska et Miller *in* Miller 1923, X 416 (after Geitler 1932).

* ca. = circa. Illustrations from the literature for which no magnifications are presented are estimated and designated "ca."

NOTE: The figures on all of the plates were reduced by 13% due to page size restrictions. This should be considered when using the magnifications given on the plate legends.

PLATE 1

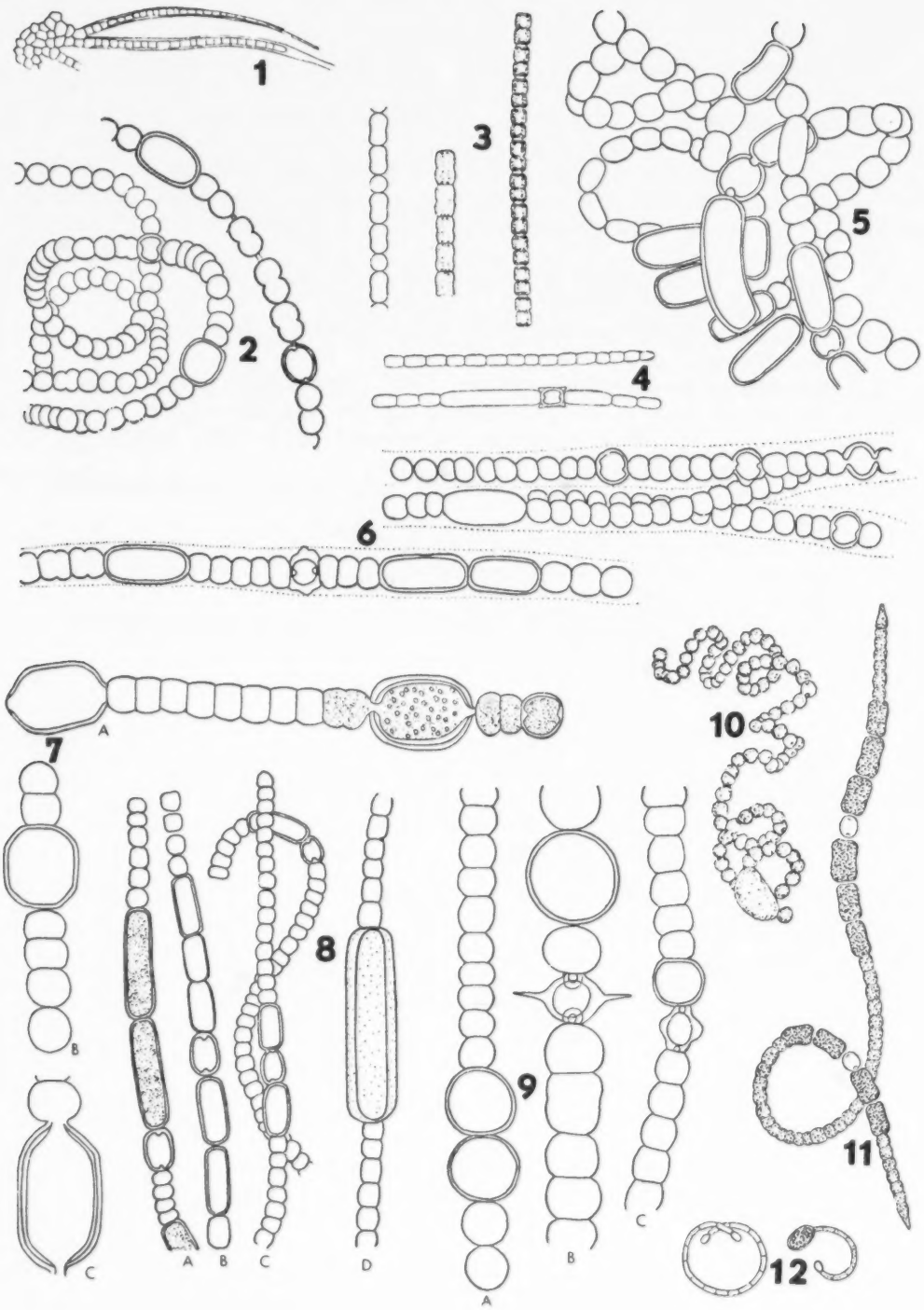


PLATE 2

Figure

1. *Aphanizomenon flosaquae* Ralfs 1850, A-B = X 750; C = 225 (after Prescott 1962).
2. *Aphanocapsa montana* Cramer *in* Wartmann et Schenk 1862, ca. X 1000 (after Golubic 1967).
3. *Aphanocapsa pulchra* Rabenhorst 1865, X 500 (after Prescott 1962).
4. *Aphanocapsa rivularis* Rabenhorst 1865, X 825 (after Prescott 1962).
5. *Aphanothece castagnei* Rabenhorst 1865, A = X 1500; B = 1875 (after Prescott 1962).
6. *Aphanothece clathrata* G. S. West *in* West et West 1906, A = X 1500; B = X 900 (after Prescott 1962).
7. *Aphanothece nostocopsis* Skuja 1932, ca. X 550 (after Huber-Pestalozzi 1938).
8. *Aphanothece pulverulenta* Bachmann 1921, individual cells shown to the right (ca. X 500) of colony (after Geitler 1932).
9. *Aphanotheceae stagnina* Braun *in* Rabenhorst 1854-1869, X 750 (after Prescott 1962).
10. *Calothrix braunii* Bornet et Flahault 1886, X 500 (after Prescott 1962).
11. *Calothrix confervicola* C. A. Agardh 1824, A = plant in hormogonia stage, ca. X 100; B = young filament, ca. X 400 (after Geitler 1932).
12. *Calothrix fusca* Bornet et Flahault 1886, X 900 (after Prescott 1962).

PLATE 2

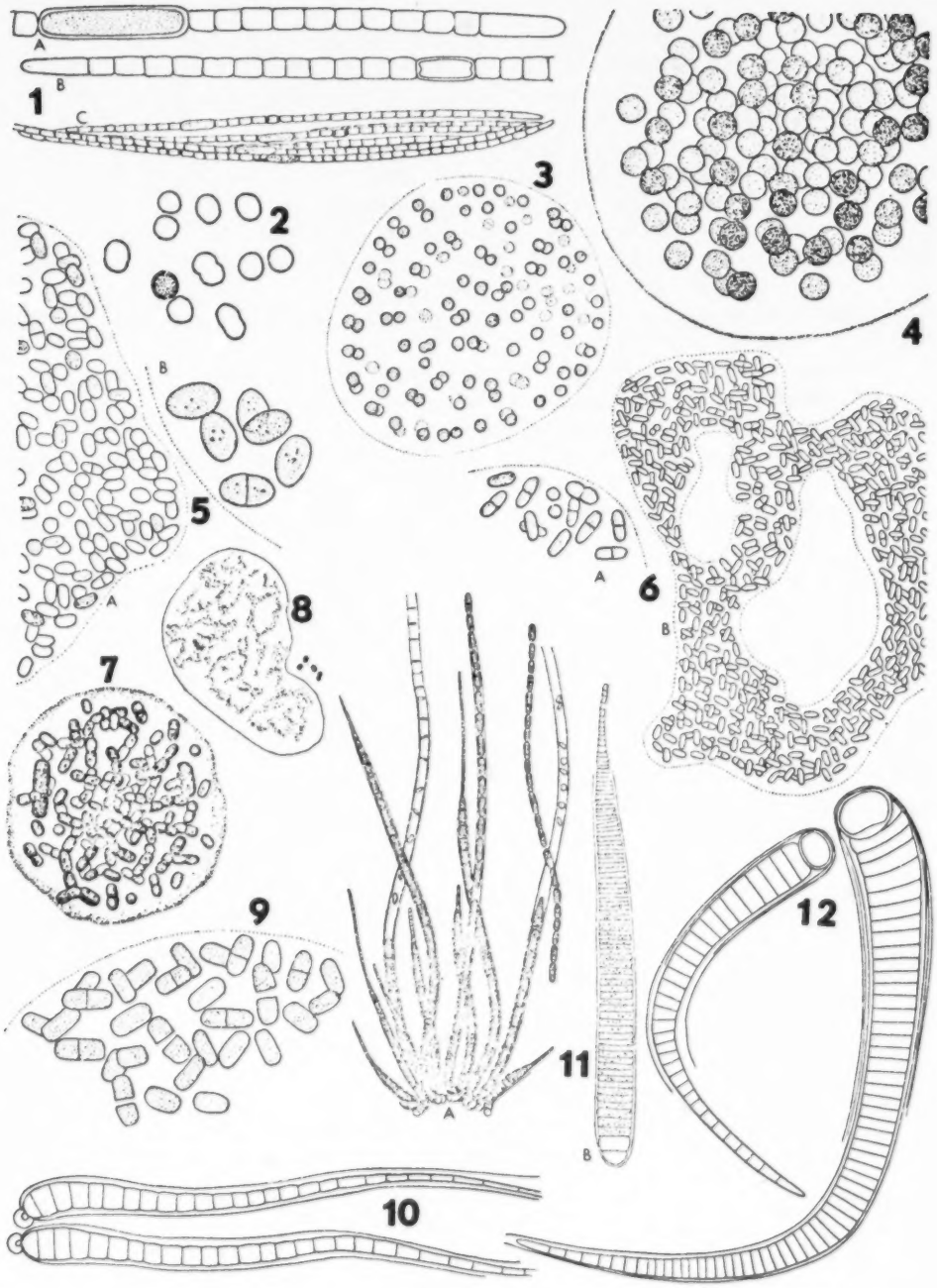


PLATE 3

Figure

1. *Calothrix parietina* Thuret 1875, X 405 (after Prescott 1962).
2. *Chamaesiphon confervicola* Braun in Rabenhorst 1865, X 330 (after Prescott 1962).
3. *Chamaesiphon fuscus* Hansgirg 1892, ca. X 1000 (after Geitler 1932).
   A = Colony formation.
   B = Exospore formation.
   C = Individual cell with pseudovagina
   D-E = Variations in layering of stratum
4. *Chamaesiphon incrustans* Grunow in Rabenhorst 1865, A = X 500; B = X 1000 (after Prescott 1962).
5. *Chamaesiphon polonicus* Hansgirg 1892, ca. X 1500 (after Geitler 1932).
6. *Chamaesiphon polymorphus* Geitler 1925b, X 900 (after Geitler 1932).
7. *Chamaesiphon regularis* Geitler 1932, A = X 550; B = X 340; C-D = X 640 (after Geitler 1932).
8. *Chamaesiphon subglobosus* Lemmermann 1910, ca. X 500 (after Geitler 1932).
9. *Chlorogloea microcystoides* Geitler 1925b, ca. X 500 (after Geitler 1932).

PLATE 3

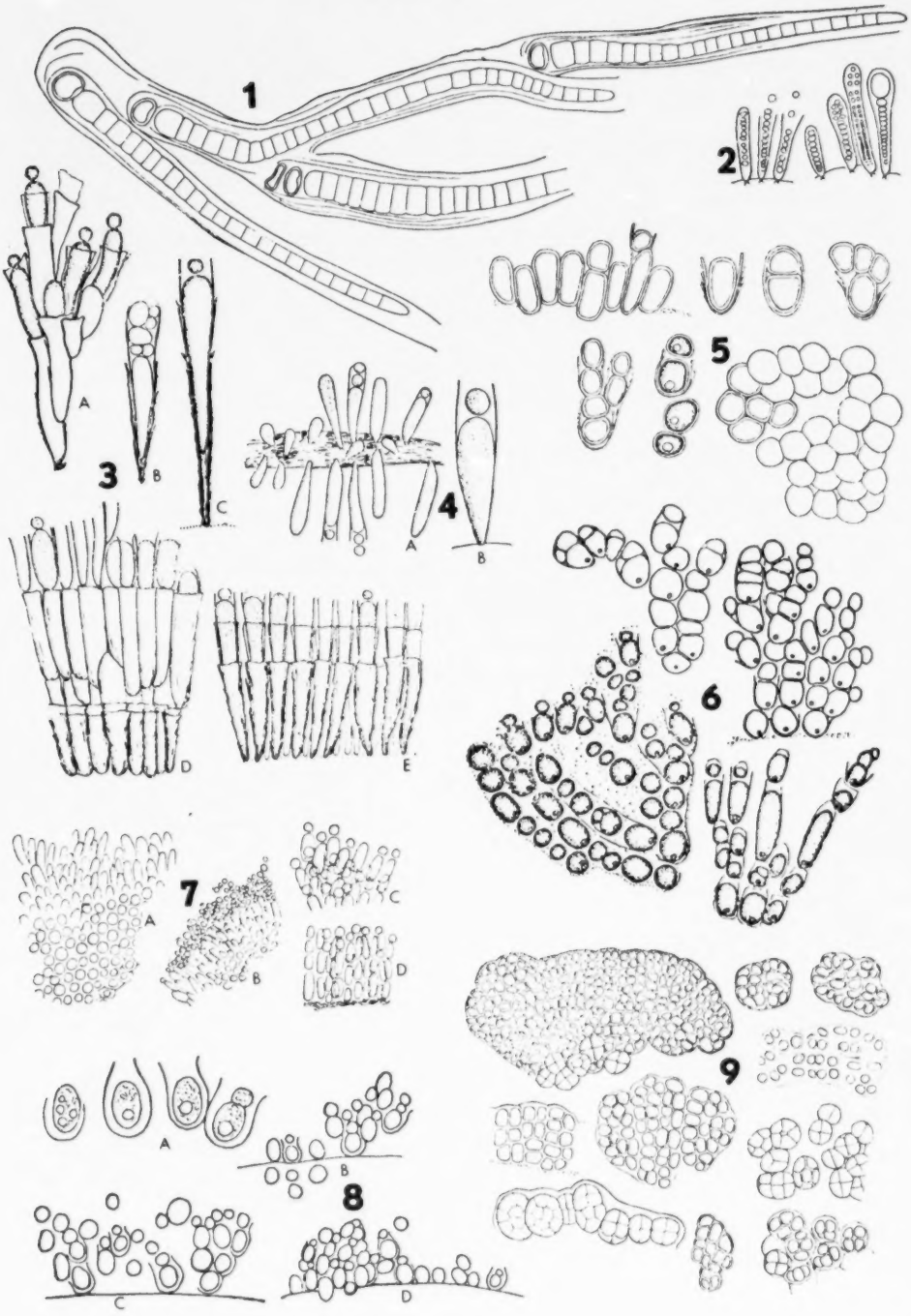


PLATE 4

Figure

1. *Chroococcus dispersus* Lemmermann 1904, X 825 (after Prescott 1962).
2. *Chroococcus limneticus* Lemmermann 1898b, X 500 (after Prescott 1962).
3. *Chroococcus minutus* Nageli 1849, X 600 (after Prescott 1962).
4. *Chroococcus planctonicus* Bethge 1935, ca. X 1500 (after Huber-Pestalozzi 1938).
5. *Chroococcus turgidus* Nageli 1849, X 590 (after Prescott 1962).
6. *Chroococcus varius* Braun *in* Rabenhorst 1861-1878, X 1000 (after Prescott 1962).
7. *Coelosphaerium kuetzingianum* Nageli 1849, X 750 (after Prescott 1962).
8. *Coelosphaerium naegelianum* Unger 1854, X 750 (after Prescott 1962).
9. *Cylindrospermum majus (maius)* Kutzing 1843, X 900 (after Prescott 1962).
10. *Dactylococcopsis ellipsoideus* Geitler 1942, X 760 (redrawn from Schroder 1917).
11. *Dactylococcopsis irregularis* Smith 1922, X 800 (after Geitler 1932).
12. *Dactylococcopsis rhaphidioides* Hansgirg 1888, A-C = X 750; B = X 375 (after Prescott 1962).
13. *Dactylococcopsis smithii* Chodat et Chodat 1925, A = X 925; B = X 490 (after Prescott 1962).
14. *Desmonema wrangelii* Bornet et Flahault 1887, ca. X 400 (after Geitler 1932).

PLATE 4

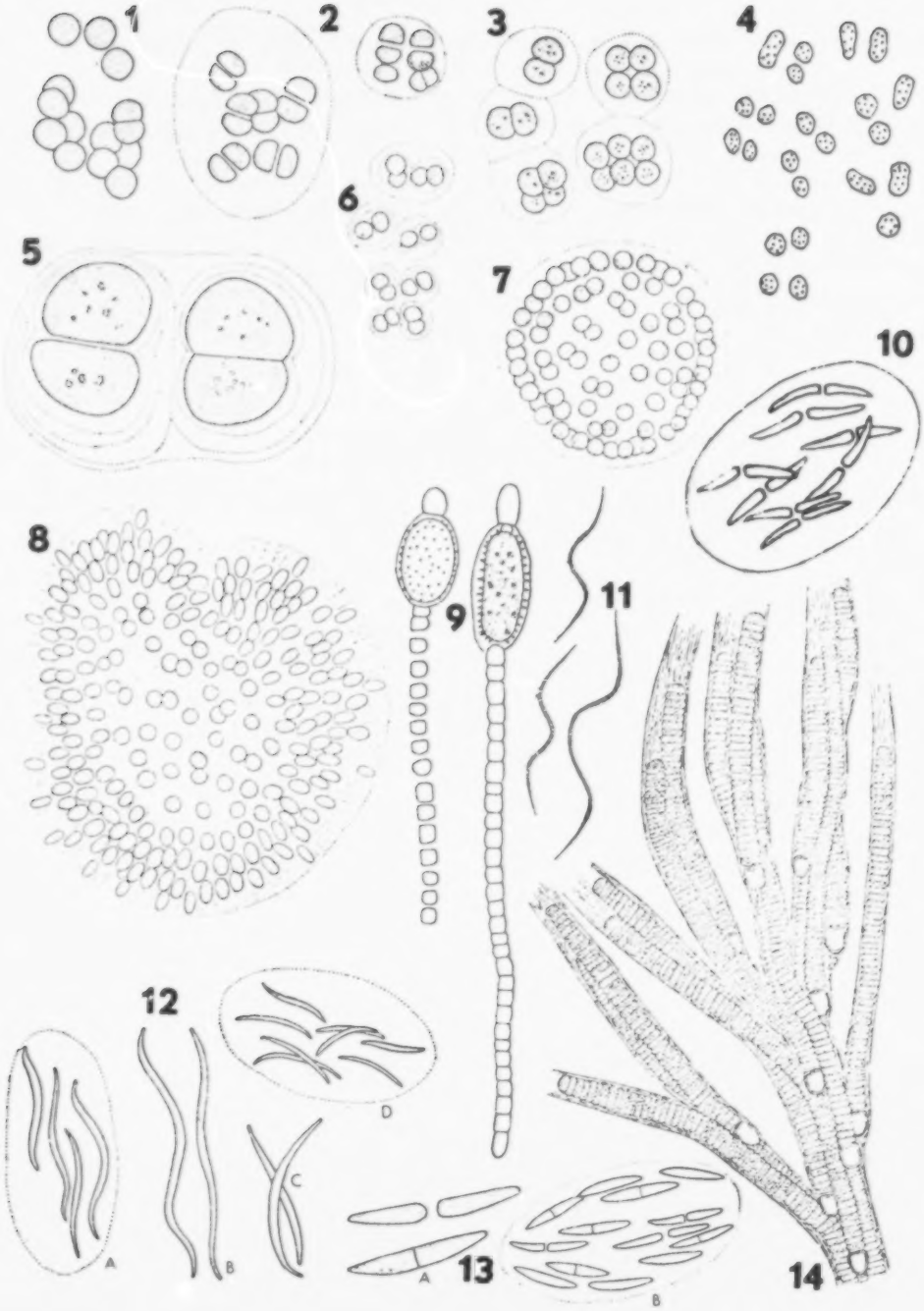


PLATE 5

Figure

1. *Dichothrix gypsophila* Bornet et Flahault 1886, A = ca. X 150 ; B = X 500 (after Prescott 1962).
2. *Fischerella muscicola* Gomont 1895, X 500 (after Prescott 1962).
3. *Gloeocapsa aeruginosa* Kutzing 1845-1849, X 750 (after Prescott 1962).
4. *Gloeotrichia echinulata* Richter 1894, A = filament, X 750; B = optical section of colony, X 135 (after Prescott 1962).
5. *Gloeotrichia natans* Rabenhorst 1847, X 750 (after Prescott 1962).
6. *Gloeotrichia pisum* Thuret 1875, A = X 8; B = 4; C = X 400 (after Prescott 1962).

PLATE 5

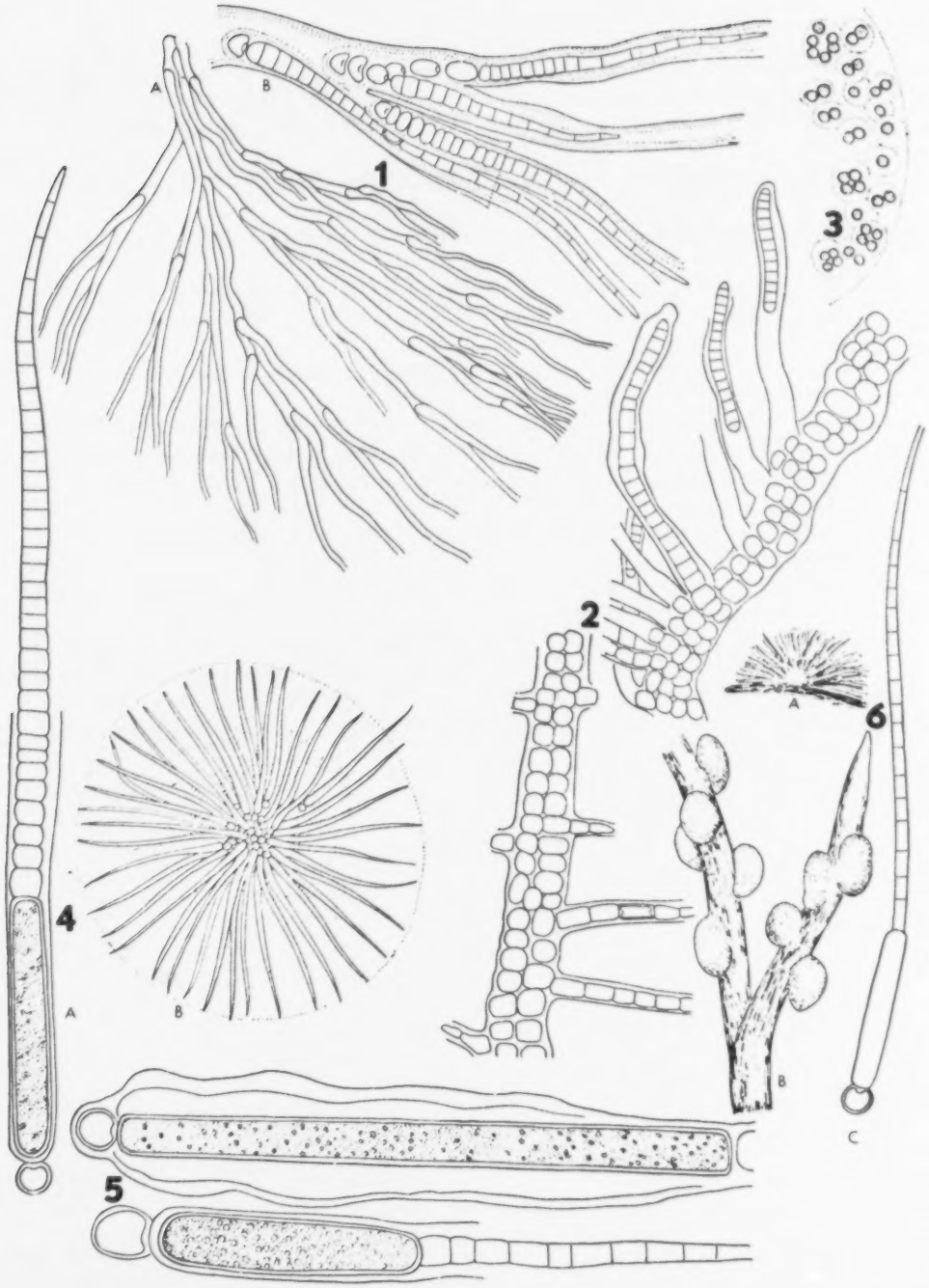


PLATE 6

Figure

1. *Gomphosphaeria aponina* Kutzing 1836, X 600 (after Prescott 1962).
2. *Gomphosphaeria lacustris* Chodat 1898, X 600 (after Prescott 1962).
3. *Hapalosiphon fontinalis* Bornet 1889, ca. X 500 (after Geitler 1932).
4. *Homoethrix crustacea* Woronichin 1923, ca. X 1000 (after Elenkin 1949).
5. *Lyngbya circumcreta* G. S. West 1907, ca. X 900 (after Geitler 1932).
6. *Lyngbya contorta* Lemmermann 1898a, X 1125 (after Prescott 1962).
7. *Lyngbya digueti* Gomont *in* Hariot 1895, X 925 (after Prescott 1962).
8. *Lyngbya kuetzingii* Schmidle 1896 (1897), ca. X 1500 (after Desikachary 1959).
9. *Lyngbya limnetica* Lemmermann 1898b, X 1725 (after Prescott 1962).
10. *Lyngbya martensiana* Meneghini 1837, X 900 (after Prescott 1962).
11. *Merismopedia convoluta* De Brebisson *in* Kutzing 1849, X 600 (after Prescott 1962).
12. *Merismopedia elegans* Braun *in* Kutzing 1849, X 500 (after Prescott 1962).
13. *Merismopedia glauca* Nageli 1849, A = X 590; B = X 600; C = X 590 (after Prescott 1962).
14. *Merismopedia minima* Beck *in* Beck et Zahlbruchner 1897, A = ca. X 600; B = ca. X 1500 (after Proschkina-Lavrenko et Makarova 1968).
15. *Merismopedia punctata* Meyen 1839, X 750 (after Prescott 1962).
16. *Merismopedia tenuissima* Lemmermann 1898b, X 1250 (after Prescott 1962).

PLATE 6

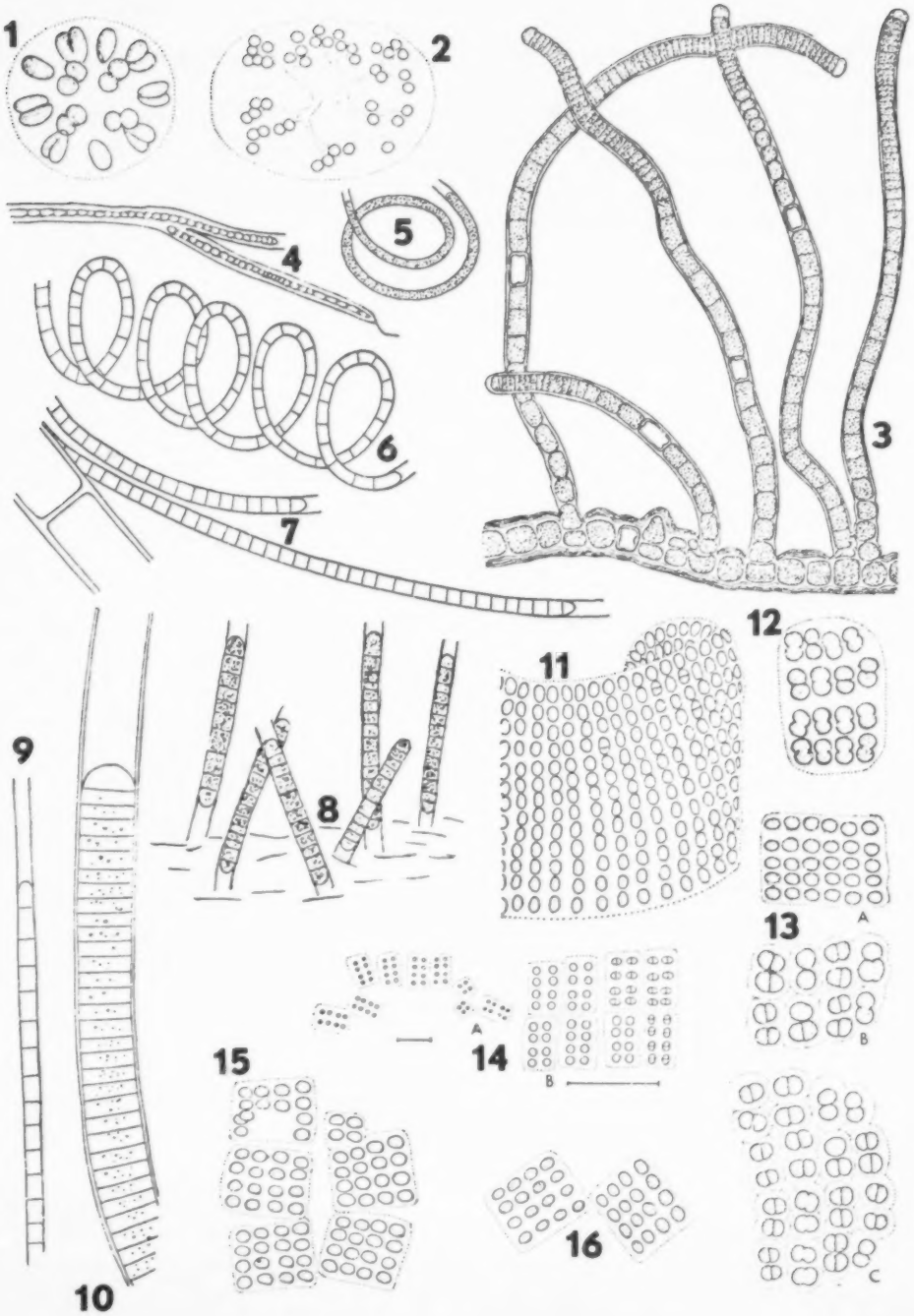


PLATE 7

Figure

1. *Microcoleus subtorulosus* Gomont 1890, ca. X 750 (after Geitler 1932).
2. *Microcrocis geminata* Geitler 1942, X 500 (after Geitler 1932).
3. *Microcystis aeruginosa* Kutzing 1846, A = X 170; B = X 750; C = X 940 (after Prescott 1962).
4. *Microcystis elabens* Kutzing 1846, A, C-E = ca. X 350; B = ca. X 700 (after Geitler 1932).

PLATE 7

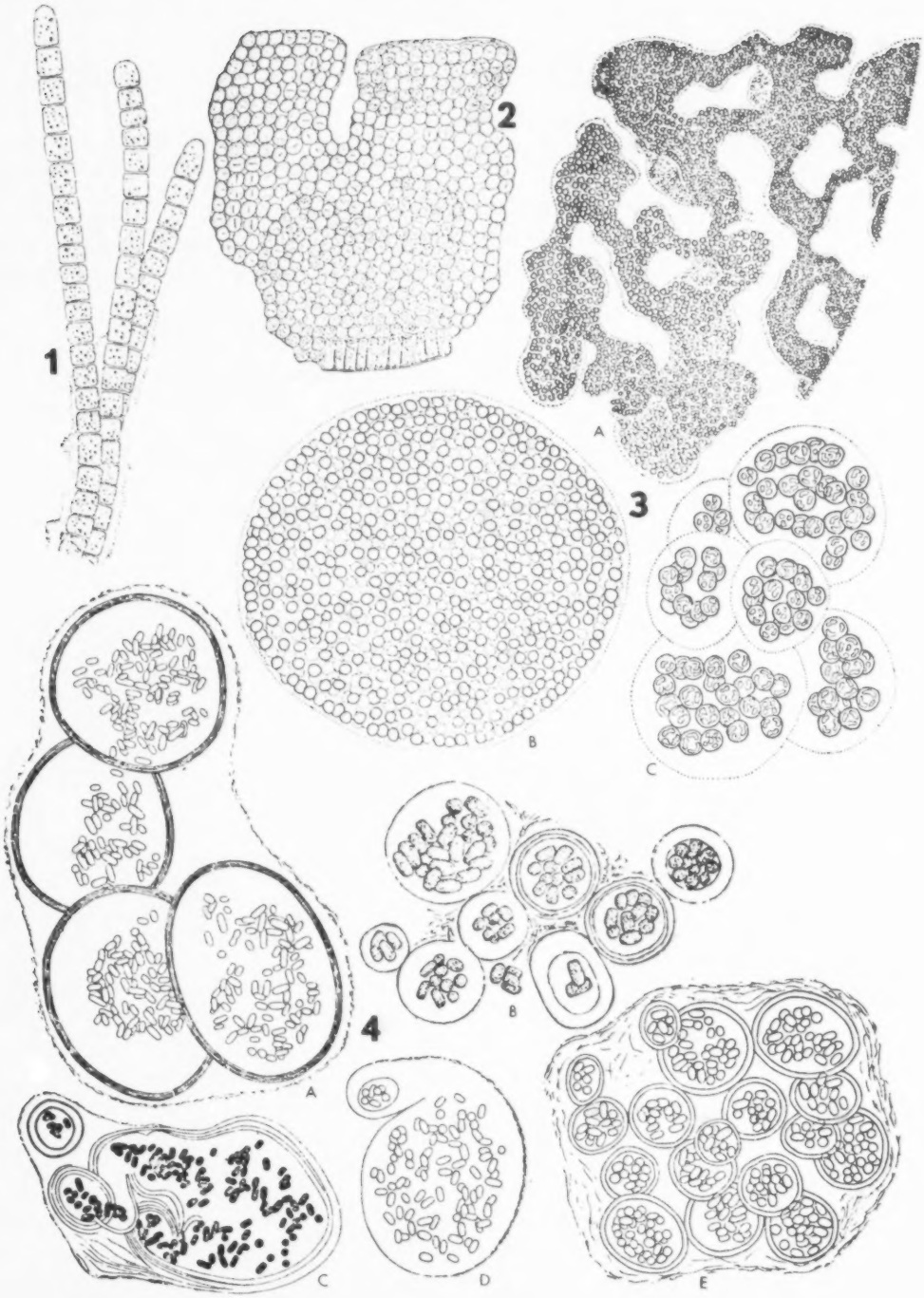


PLATE 8

Figure

1. *Microcystis flosaquae* Kirchner 1898, ca. X 500 (after Geitler 1932).
2. *Microcystis incerta* Lemmermann 1899, X 750 (after Prescott 1962).
3. *Microcystis viridis* Lemmermann 1903, X 500 (after Huber-Pestalozzi 1938).
4. *Microcystis wesenbergii* Komarek *in* Kondratjewa 1964, A = two fenestrate colonies, X 150; B = part of colony with rod shaped bacteria attached to the margin and coccoid ones within, X 530 (after Lund 1962).
5. *Nodularia spumigena* Mertens *in* Jurgens 1822, X 900 (after Prescott 1962).
6. *Nostoc carneum* C. A. Agardh 1824, X 900 (after Prescott 1962).
7. *Nostoc caeruleum (coeruleum)* Lyngbye 1819, X 900 (after Prescott 1962).
8. *Nostoc linckia* Bornet et Thuret 1880, A = X 190; B-C = X 1125 (after Prescott 1962).
9. *Nostoc muscorum* C. A. Agardh 1812, X 540 (after Prescott 1962).
10. *Nostoc paludosum* Kutzing 1850, X 750 (after Prescott 1962).

PLATE 8

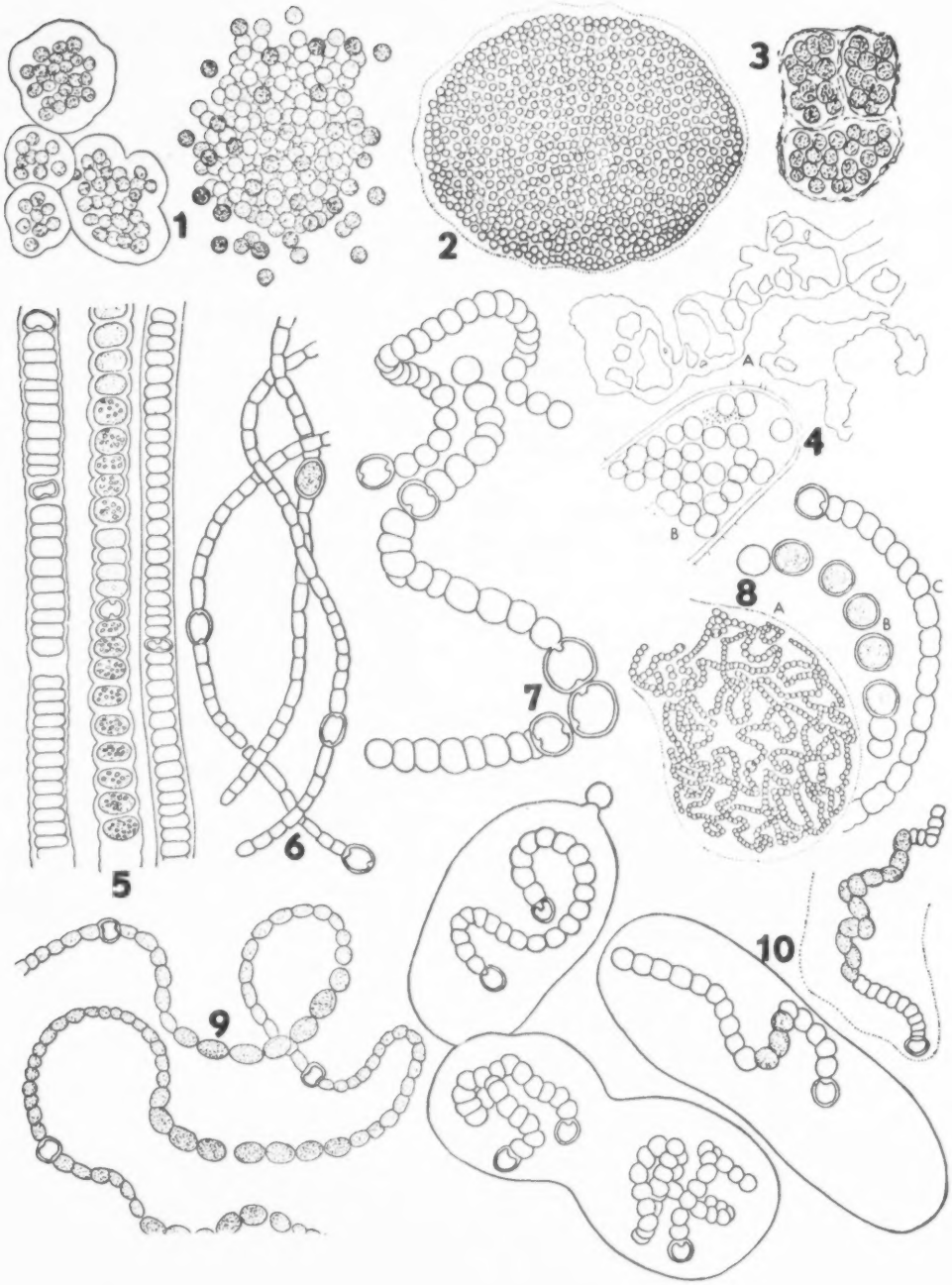


PLATE 9

Figure

1. *Nostoc sphaerica (sphaericum)* Vaucher 1803, A-B = X 900; C-D = habit, X 3/4 (after Prescott 1962).
2. *Nostoc zetterstedtii* Areschoug 1872, 8 habit figures (no magnifications given) (after Geitler 1932).
3. *Oncobyrsa cesatii (cesatiana)* Rabenhorst 1865, A = ca. X 750; B = ca. X 1500 (after Geitler 1932).
4. *Oscillatoria agardhii* Gomont 1892, X 600 (after Prescott 1962).
5. *Oscillatoria amoena* Gomont 1892, X 750 (after Prescott 1962).
6. *Oscillatoria amphibia* C. A. Agardh 1827, X 900 (after Prescott 1962).
7. *Oscillatoria amphigranulata* Van Goor 1918, X 2250 (after Prescott 1962).
8. *Oscillatoria anguina* Gomont 1892, X 590 (after Prescott 1962).
9. *Oscillatoria angusta* Koppe 1924, X 750, with enlarged trichome X 2000 (after Prescott 1962).
10. *Oscillatoria borneti* Zukal 1894, A = X 590; B = X 750 (after Prescott 1962).
11. *Oscillatoria brevis* Gomont 1892, ca. X 600 (after Geitler 1932).
12. *Oscillatoria chalybea* Gomont 1892, X 750 (after Prescott 1962).
13. *Oscillatoria chlorina* Kutzing 1843, ca. X 900 (after Geitler 1932).
14. *Oscillatoria curviceps* C. A. Agardh 1824, X 590 (after Prescott 1962).
15. *Oscillatoria formosa* Bory 1827, A = X 900; B = X 1500 (after Prescott 1962).
16. *Oscillatoria geminata* Meneghini 1837, ca. X 500 (after Geitler 1932).
17. *Oscillatoria guttulata (guttula)* Van Goor 1918, X 2250 (after Huber-Pestalozzi 1938).
18. *Oscillatoria lacustris* Geitler 1925a, X 900 (after Prescott 1962).
19. *Oscillatoria lauterbornii* Schmidle 1901, ca. X 1200 (after Geitler 1932).
20. *Oscillatoria limnetica* Lemmermann 1900, X 900 (after Prescott 1962).

PLATE 9

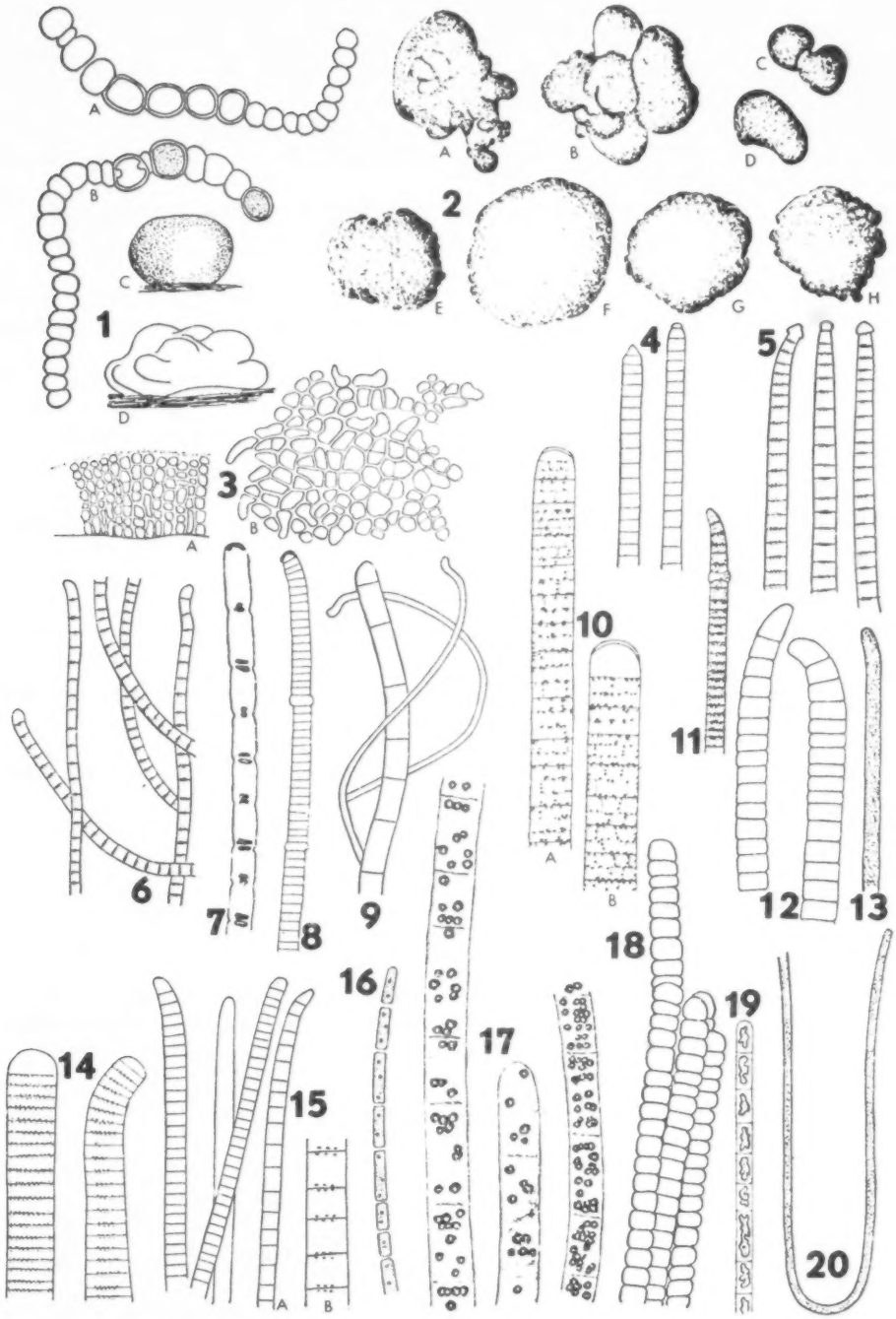


PLATE 10

Figure

1. *Oscillatoria limosa* C. A. Agardh 1812, X 750 (after Prescott 1962).
2. *Oscillatoria minima* Gicklhorn 1921, X 1000 (after Prescott 1962).
3. *Oscillatoria nigra* Vaucher 1803, X 750 (after Prescott 1962).
4. *Oscillatoria planctonica* Woloszynska 1912, ca. X 400 (after Huber-Pestalozzi 1938).
5. *Oscillatoria princeps* Vaucher 1803, X 660 (after Prescott 1962).
6. *Oscillatoria pseudogeminata* G. Schmid 1914, ca. X 2000 (after Geitler 1932).
7. *Oscillatoria putrida* Schmidle 1901, ca. X 800 (after Geitler 1932).
8. *Oscillatoria redekei* Van Goor 1918, X 2250 (after Huber-Pestalozzi 1938).
9. *Oscillatoria rubescens* De Candolle 1825, X 625 (after Prescott 1962).
10. *Oscillatoria sancta* Gomont 1892, X 750 (after Prescott 1962).
11. *Oscillatoria simplissima* Gomont 1892, ca. X 500 (after Gomont 1892).
12. *Oscillatoria splendida* Greville 1324, X 1050 (after Prescott 1962).
13. *Oscillatoria subtilissima* Kutzing 1846, X 700 (after Cocke 1967).
14. *Oscillatoria tenuis* C. A. Agardh 1813, A-B = X 750; C = X 1240 (after Prescott 1962).
15. *Oscillatoria terebriformis* C. A. Agardh 1827, X 625 (after Prescott 1962).
16. *Oscillatoria trichodes* Szafer 1910, ca. X 2000 (after Desikachary 1959).
17. *Phormidium ambiguum* Gomont 1892, X 750 (after Prescott 1962).
18. *Phormidium angustissimum* W. et G. S. West 1897, X 700 (after Cocke 1967).
19. *Phormidium autumnale* Gomont 1893, A = X 925; B = X 800 (after Prescott 1962); C = ca. X 500 (after Geitler 1932).
20. *Phormidium favosum* Gomont 1892, X 485 (after Prescott 1962).
21. *Phormidium foveolarum* Gomont 1892, ca. X 500 (after Geitler 1932).
22. *Phormidium increstatum* Gomont *in* Bornet et Flahault 1889, ca. X 1000 (after Geitler 1932).
23. *Phormidium inundatum* Kutzing 1849, X 1000 (after Prescott 1962).
24. *Phormidium laminosum* Gomont 1890, ca. X 1000 (after Geitler 1932).
25. *Phormidium luridum* Gomont 1892, ca. X 500 (after Geitler 1932).
26. *Phormidium molle* Gomont 1892, X 700 (after Cocke 1967).
27. *Phormidium papyraceum* Gomont 1892, ca. X 500 (after Geitler 1932).

PLATE 10

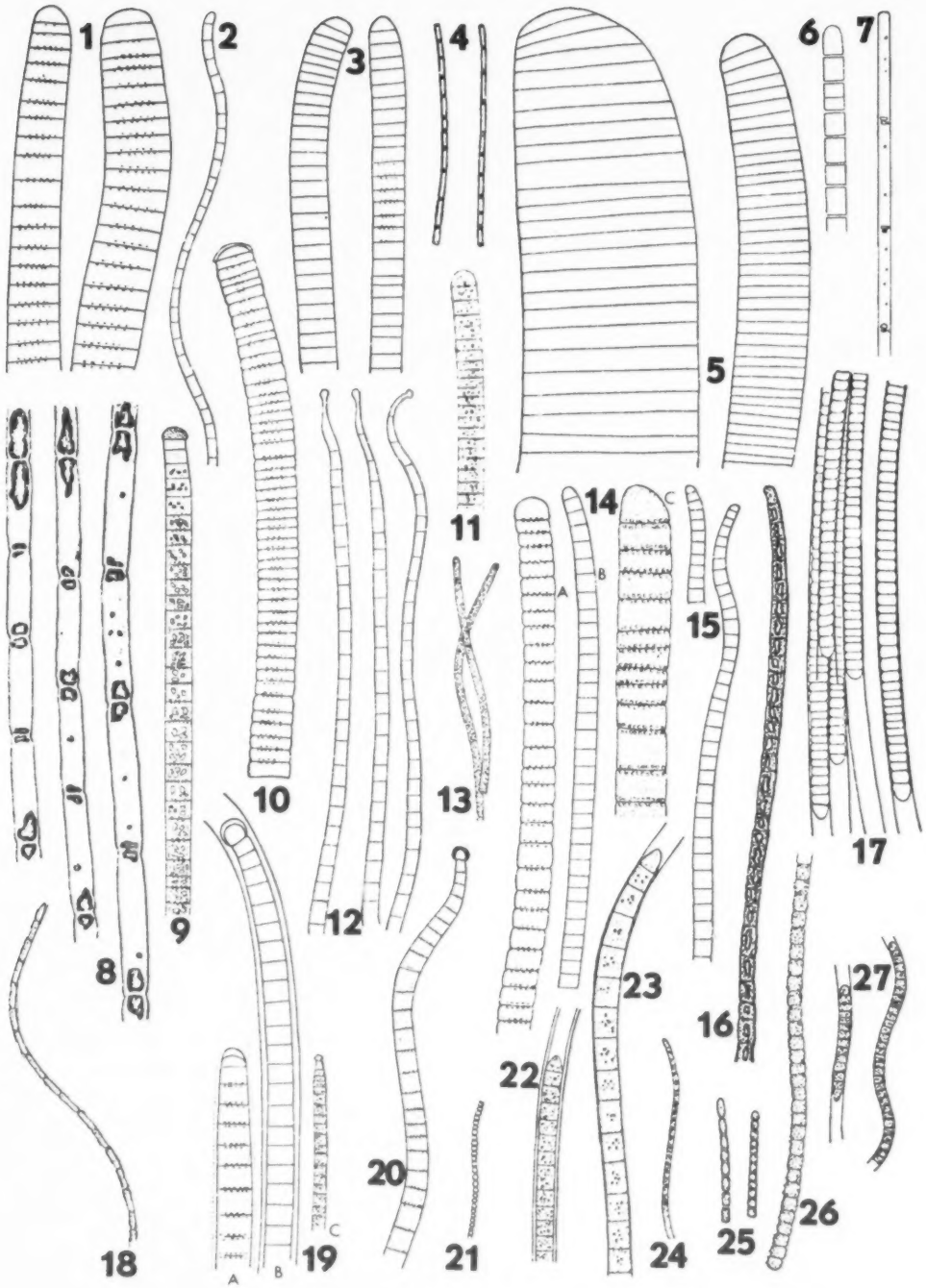


PLATE 11

Figure

1. *Phormidium retzii* Gomont 1892, X 380 (after Prescott 1962).
2. *Phormidium subfuscum* Kutzing 1843, X 625 (after Prescott 1962).
3. *Phormidium tenue* Gomont 1892, X 1125 (after Prescott 1962).
4. *Phormidium uncinatum* Gomont 1890, X 625 (after Prescott 1962).
5. *Plectonema gracillimum* Hansgirg 1885, X 1000 (after Cocke 1967).
6. *Plectonema nostocorum* Bornet *in* Bornet et Thuret 1880, X 1000 (after Prescott 1962).
7. *Pseudanabaena catenata* Lauterborn 1916, ca. X 2000 (after Geitler 1932).
8. *Pseudanabaena galeata* Bocher 1949, A-E = X 1700 (after Bocher 1949).
9. *Rhabdoderma minima* Lemmermann 1908, ca. X 1000 (after Geitler 1932).
10. *Rhabdoderma sigmoidea* Moore et Carter 1923, X 570 (after Geitler 1932).
11. *Rivularia rufescens* (Nageli *in* Kutzing 1849), X 500 (after Kutzing 1852).
12. *Schizothrix calcicola* Gomont 1892, A = X 600; B = X 1000 (after Tiffany and Britton 1952).
13. *Schizothrix fasciculata* Gomont 1892, A = ca. X 500; B-C = ca. X 1000 (after Geitler 1932).
14. *Schizothrix lacustris* Braun *in* Kutzing 1849, A = apex, ca. X 700; B = habit, ca. X 700 (after Prescott 1962).
15. *Schizothrix pulvinata* Gomont 1892, A-B = ca. X 600 (after Tilden 1910).

PLATE 11

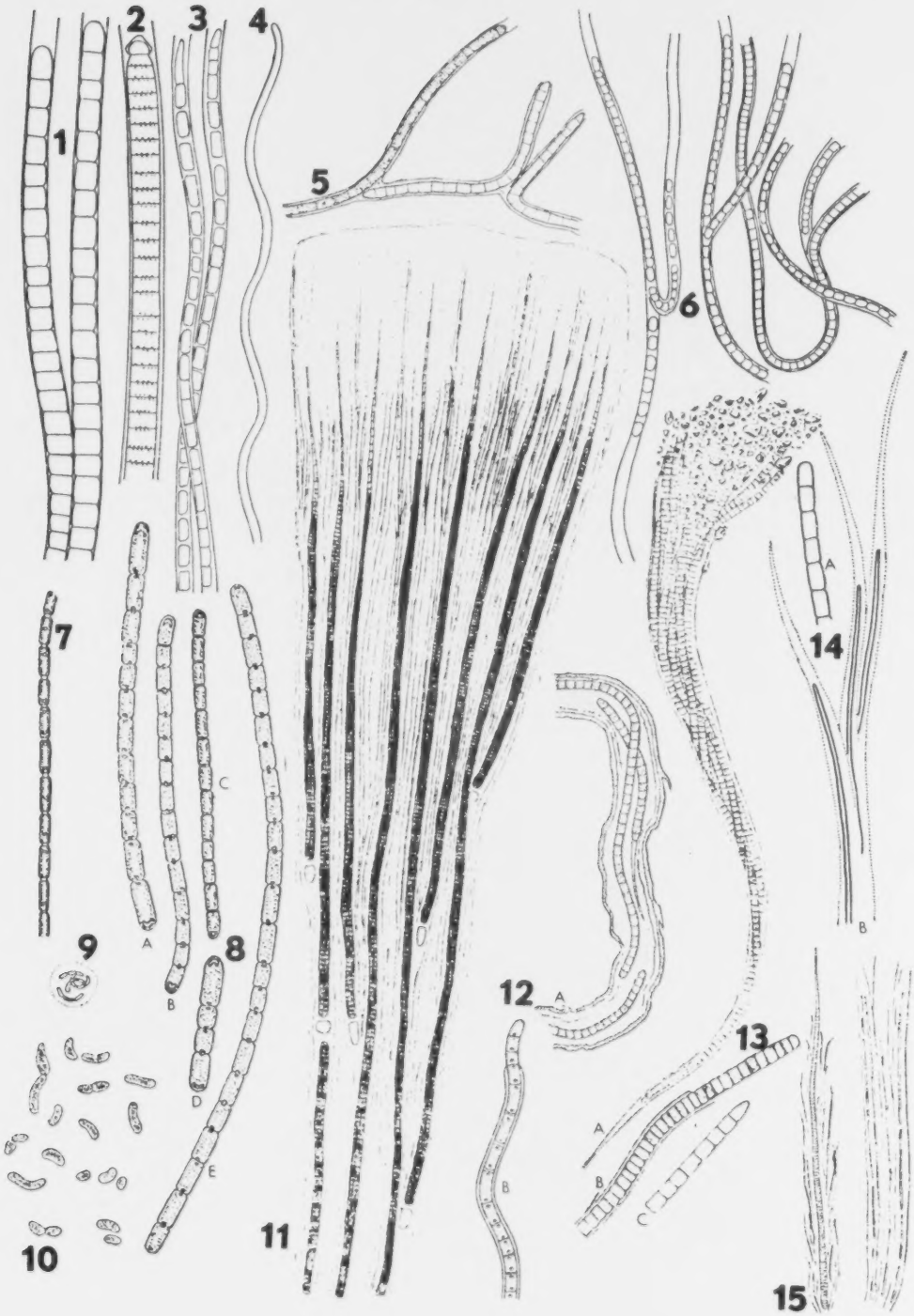
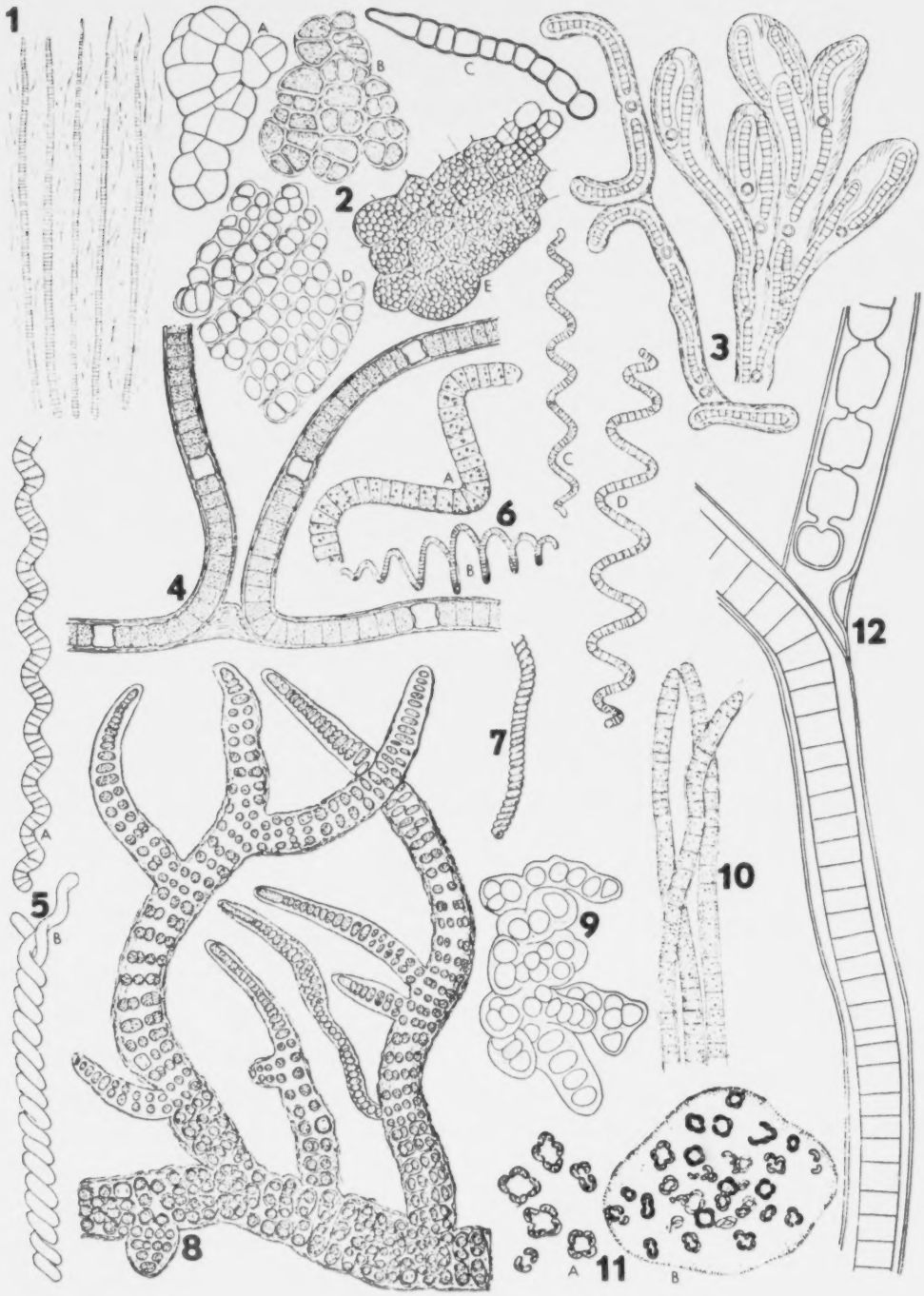


PLATE 12

Figure

1. *Schizothrix pulvinata* Gomont 1892, ca. X 600 (after Tilden 1910).
2. *Scopulonema minus* Geitler 1942, A-E = X 800 (after Geitler 1932).
3. *Scytonema crustaceum* C. A. Agardh 1824, ca. X 200 (after Geitler 1932).
4. *Scytonema ocellatum* Bornet et Flahault 1887, ca. X 360 (after Geitler 1932).
5. *Spirulina jenneri* Geitler 1925a, A = X 500; B = X 375 (after Prescott 1962).
6. *Spirulina platensis* Geitler 1925a, A = ca. X 1200; C-D = ca. X 500 (after Geitler 1932).
7. *Spirulina subsalsa* Orsted 1842, ca. X 1000 (after Geitler 1932).
8. *Stigonema informe* Kutzing 1849, ca. X 200 (after Geitler 1932).
9. *Stigonema mesentericum* Geitler 1925a, ca. X 350 (after Geitler 1932).
10. *Symploca muralis* Kutzing 1843, X 700 (after Cocke 1967).
11. *Tetrarcus ilsteri* Skuja 1932, A = X 1060; B = X 500 (after Huber-Pestalozzi 1938).
12. *Tolypothrix lanata* Wartmann *in* Rabenhorst 1858, X 900 (after Prescott 1962).

PLATE 12



SECTION 3

DESCRIPTION OF SPECTRA AND THEIR CATEGORIES

The categories and spectra used in the present work are essentially the same as those detailed by Lowe (1974) with a few minor exceptions to accommodate the blue green algae. The reader should remember that some of the terms used on the profile sheets (especially those used in the "unknown or other" categories) have a very special definition and cannot be applied in the general sense of the "spectrum"; therefore, the reader should refer to the respective publications in which they occur. In other cases, it is apparent that "frigidophile" = oligothermal, etc.

pH SPECTRUM

Very little direct information exists in the literature about the placement of the Cyanophyta in the pH spectrum. It is assumed that at least part of the reason for this is the misconception that the Cyanophyta are all indifferent or restricted to the alkaline end of the spectrum.

Acidobiontic - occurring below pH 7 with optimum development below pH 5.5.

Acidophilous - occurring at about pH 7 with optimum development below pH 7.

Indifferent - occurring around pH 7

Alkaliphilous - optimum development above pH 7 but occurring at pH around 7

Alkalibiontic - occurring above pH 7

Unknown or other - undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

SAPROBIEN (SAPROBIAN) SPECTRUM

Although the saprobien and nutrient spectra are very similar in that they both present a reflection of nutrients in bodies of water, they are not the equivalents of each other (that is to say, oligosaprobic=oligotrophic,

mesosaprobic=mesotrophic, etc.) as is believed commonly by many limnologists, aquatic biologists, etc. This fact is emphasized by Fjerdingstad (1965a) in the discussion of *Cladophora glomerata*, "It should be borne in mind that in the larger lakes often traversed by streams and sometimes with a large volume of water, a minor local pollution will act as a greater or less eutrophication, which should not simply be correlated with a pollution corresponding to Kolkwitz and Marsson's β (weak) mesosaprobic zone". Also Tümpling (1960) pointed out that trophy and saprobia are concepts which should be kept strictly separated. Caspers und Schulz (1960) express this even more strongly, "Der Fehler im Grundansatz der Konzeption liegt unseres Erachtens darin, dass der Trophiegrad des natürlichen eingebaut ist in den Grad der anthropogenen künstlichen Steigerung der Eutrophie".

A certain amount of natural pollution is inevitable. Although it is not very likely, it is possible for natural gross organic pollution to occur in small lakes and ponds. When gross organic pollution is maintained by man and when pollutants are dumped into rivers and streams certain "zones"result as these pollutants change through time. Pollution by dissolved organic nutrients is best interpreted by the saprobien (saprobian) system. The dumping of pollutants is an "artificial" act: even the resulting "zones" which are produced are conceived artificially and arbitrarily. It is also quite logical that these "zones" (or categories) would serve as a good standard for comparison, even if they served no other purpose than to provide a means of helping to define the more natural boundaries of the nutrient (inorganic nutrient) spectrum in more exact terms. The saprobien spectrum was conceived for a special purpose: for the evaluation of sewage and dissolved organic materials in streams, etc. (Kolkwitz und Marsson 1908). Although the saprobien spectrum can be applied to lakes, it seems to be more applicable to streams and rivers that have been enriched by treated or untreated sewage and by industrial toxicants, etc.

<u>Polysaprobic</u> - occurring characteristically in the predominance of reduction and cleavage processes, because of absence or low content of oxygen and because of carbon dioxide and a relatively high content of nitrogenous and putresible nutrient substances (characteristic of

high hydrogen sulphide) (high dissolved organic nutrients) = Saprobiontic - organisms occurring only in most heavily polluted waters.

Mesosaprobic - occurring characteristically with decomposition and oxidation widely present and with decomposition products of protein, ammonia salts, etc. (moderate dissolved organic nutrients).

α (Strong)- occurring characteristically where self purification takes place rapidly.

β (Weak) - occurring characteristically where self purification takes place less rapidly.

Oligosaprobic - characteristic of clean water, associated with termination of mineralization and all agressive processes of self purification (low dissolved organic nutrients). While the oligosaprobic and eutrophic (category of the nutrient spectrum) categories are not necessarily equivalent, they express a degree of overlap in that they are both characterized by low levels of dissolved organic nutrients.

Saprophilic - occurring generally in organically polluted waters but occurring also in other communities.

Saproxenous - occurring primarily in biotypes other than the organically polluted ones but occurring also in the presence of pollution.

Katharobic - characteristic of waters that have not been exposed to dissolved organic nutrients or waters in which dissolved organic nutrients are very low or absent. = Saprophobic - organisms which are not capable of thriving in polluted water.

Unknown or other - Undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

NUTRIENT SPECTRUM

The nutrient spectrum has developed over a number of years as one means of evaluating lakes for the purpose of classifying them. In the life history of a lake a series of developmental stages occurs: oligotrophy, mesotrophy, and eutrophy (and perhaps dystrophy, depending upon the nature of the lake). This sequence may retrogress or repeat. These developmental changes can be

completely natural and are applied best to relative differences in dissolved inorganic nutrients, even though lakes frequently are subjected to loading with organic nutrients such as raw sewage. It is quite logical that these differences in inorganic nutrient levels be used as a maxim for comparison. These different changes in nutrient levels, while occurring to a certain extent in lotic bodies, are not so readily evident as they are in lakes. Although the nutrient spectrum can be used in interpreting rivers and other parts of the lotic system, in practice it is best applied to lakes and members of the lentic system. Eutrophy, mesotrophy, and oligotrophy indicate general productivity but they as yet have not been given positive specification or definition. Certain definite correlations can be made with the pH spectrum. It can be said that an eutrophic habitat is one that has a high pH where available organic matter is reduced rapidly to free an abundance of mineral elements and nutrients. Mesotrophy corresponds more or less with intermediate or circumneutral pH values, whereas the oligotrophic state is associated with lower pH (below 7) and the yield of mineral nutrients is low (Fjerdingstad 1965a). Sparling and Nalewajko (1970) elaborated further and indicated that the base rich lakes (characterized by higher pH) and base poor lakes (characterized by lower pH) can be classified as eutrophic and oligotrophic respectively.

Polytrophic - characteristic of extreme eutrophic conditions (usually rare).

Eutrophic - characteristic of waters rich in dissolved inorganic or mineral nutrient materials.

Mesotrophic - characteristic of waters intermediate in dissolved inorganic or mineral nutrient materials.

Oligotrophic - characteristic of waters poor in dissolved inorganic or mineral nutrient materials.

Dystrophic - characteristic of waters rich in humic materials and with pronounced oxygen consumption.

Unknown or other - Undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

HALOBIAN SPECTRUM

Euhalobous or Polyhalobous - marine forms, 30 to 40 o/oo salt content.

Mesohalobous - brackish water forms, approximately .5 to about 30 o/oo salt content.

α (Strong) - NaCl minimum about 10 o/oo.

β (Weak) - NaCl content about .5 to about 10 o/oo.

Oligohalobous - widespread in freshwater, approximately 0 to approximately .5 o/oo salt content.

Halophilous - common in freshwater but not uncommon in slightly "brackish" water.

Indifferent - freshwater forms proper.

Halophobous - characteristic of chloride deficient waters

Euryhalobous or Euryhaline - having a wide range of tolerance to salt concentration, often encompassing 2 or more large spectral designations.

Unknown or other - undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

CURRENT SPECTRUM

Limnobiontic - forms characteristic only of stagnant waters.

Limnophilous - forms with their optimum development in stagnant waters, but which also may be found in running waters.

Indifferent - forms common in both running and stagnant waters.

Rheophilous - forms with their optimum development in running waters, but which may be found in standing waters also.

Rheobiontic - forms chacteristic only of running waters.

Unknown or other - undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

GENERAL HABITAT SPECTRUM

Benthic - organisms living on the bottom of a body of water.

Lentic - standing water

Lakes - characteristic of large inland bodies of water.

Ponds - characteristic of small bodies of standing water.

Bogs or Swamps - characteristic of soft, wet, or marshy ground

Lotic - running water

Crenophilous (general) - occurring in spring waters in general.

Crenophilous (thermal) - occurring in hot springs.

Rivers and Streams - occurring in larger and smaller bodies of running water that have more or less continuous geographical expression.

Aerophilous or Terrestrial - organisms occurring above water (in the air = aerophilous) (on the soil or earth = terrestrial).

Estuarine - Characteristic of estuaries or areas where brackish-marine waters mix with fresh waters of rivers.

Littoral (Litoral) - organisms living in relatively shallow areas, close to shore or banks.

Neritic - occurring typically above the continental shelf (close to shore)

Oceanic - occurring typically over the deeper regions of the oceans.

Eurytopic or Euryecious - occurring in a wide variety of habitats or environments.

Unknown or other - undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

SPECIFIC HABITAT SPECTRUM

Planktonic or Pelagic - organisms of relatively small size which have either very small powers of locomotion or else none at all and which drift in the water, subject to waves, currents, and other water motion (Planktonic); or organisms living above the bottom of the body of water (Pelagic).

Euplanktonic - normally suspended in the water, distribution is current dependent.

Tychoplanktonic - normally associated with periphytic or terrestrial habitats but often suspended in the water.

Periphytic (Aufwuchs) - microorganisms attaching to rocks, objects, plants, etc.

Epipelic - occurring on mud.

Epilithic - occurring on rock.

Epiphytic - occurring on plants.

Other Periphytic - occurring on animals (epizooic); occurring on wood (epidendric), etc.

Unknown or other - undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

SEASONAL SPECTRUM

Any seasonal or monthly periodicity classification of algae is open to serious question concerning accuracy, unless careful consideration is given to detailed geographical comparisons, tropical and polar distribution, etc.

Winter - optimum growth during winter.

Spring - optimum growth during spring.

Summer - optimum growth during summer.

Fall - optimum growth during fall.

TEMPERATURE SPECTRUM

This spectrum includes both optimum temperatures in centrigrade degrees and ranges of temperature change tolerated by individuals. Blue Green Algae have much value in indicating thermal pollution. However, this report includes only those Cyanophytes that have value as potential indicators of both thermal and inorganic and/or organic pollution. Damann (1945, 1960) indicated that the Cyanophyta do not become significant until water temperature exceeds 21-70°C.

Euthermal - warm-water forms usually occurring at temperature greater than 30°C.

Mesothermal - temperate-water forms, usually occurring between 15 and 30°C.

Oligothermal - cold-water forms, usually occurring between 0 and 15°C.

Stenothermal - occurring over a temperature range of no greater than 5°C.

Metathermal - occurring over a temperature range of from 5 to 15°C.

Eurythermal - occurring over a temperature range of 15° or greater.

Unknown or other - undesignated category to accommodate general characteristics or characteristics which cannot be referred directly to the other categories in the spectrum.

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APPENDIX 1

SUPPLEMENTARY KEYS TO SPECIES

ANABAENA Bory 1822

KEY TO SPECIES

1a	Usually solitary or as free-floating masses of trichomes, euplanktonic	2
1b	Not truly planktonic, epiphytic, or edaphic; often enmeshed with other algae	5
2a (1)	Mature resting spores (akinetes) distributed at random or near or far from the heterocysts	3
2b	Mature resting spores frequently adjacent to heterocysts on one or both sides	*A. BORNETICA*
3a (2)	Mature resting spores oblong, spherical, or ellipsoidal (not cylindrical)	*A. LIMNETICA*
3b	Mature resting spores cylindrical	4
4a (3)	Mature resting spores more than twice as broad as the normal vegetative cells	*A. LEVANDERI*
4b	Mature resting spores less than twice as broad as the normal vegetative cells	*A. AFFINIS*
5a (1)	Mature resting spores scattered or far from heterocysts	7
5b	Mature resting spores adjacent to heterocysts	6
6a (5)	Vegetative cells ovate, ellipsoidal, barrel shaped, or globose	*A. LAPPONICA*
6b	Vegetative cells cylindrical	*A. SUBCYLINDRICA*
7a (5)	Vegetative cells cylindrical	*A. VERRUCOSA*
7b	Vegetative cells ovate, ellipsoidal or globose	8
8a (7)	Two or more akinetes occurring together or adjacent in series	*A. VARIABILIS*

8b Akinetes usually single or occasionally in pairs, subcylindrical ..... *A. AEQUALIS*

ILLUSTRATIONS

A. AEQUALIS Borge 1907 (1906). Vodenicharov *et al.* 1971, p. 121, text fig.; Prescott 1962, pl. 115, fig. 1-2; Huber-Pestalozzi 1938, fig. 149; Geitler 1932, fig. 578.

A. AFFINIS Lemmermann 1898b. (= *Anabaena catenula* var. *affinis*). Bourrelly 1970, pl. 123, fig. 3; Prescott 1962, pl. 115, fig. 10, 14, 15; Lemmermann 1898b, pl. 1, fig. 12, 13, 16, 17.

A. BORNETIANA Collins 1896. Prescott 1962, pl. 115, fig. 8-9; Huber-Pestalozzi 1938, fig. 129; Geitler 1932, fig. 569.

A. LAPPONICA Borge 1913. Prescott 1962, pl. 116, fig. 11; Huber-Pestalozzi 1938, fig. 127; Geitler 1932, fig. 568 a.

A. LEVANDERI Lemmermann 1906. Prescott 1962, pl. 117, fig. 1-2; Huber-Pestalozzi 1938, fig. 138; Geitler 1932, fig. 574.

A. LIMNETICA G. M. Smith 1916b. Prescott 1962, pl. 117, fig. 3.

A. SUBCYLINDRICA Borge 1921. Proschkina-Lavrenko *et* Makarova 1968, fig. 21-4; Prescott 1962, pl. 118, fig. 6-8; Prescott 1954, fig. 271 b, d; Huber-Pestalozzi 1938, fig. 124; Geitler 1932, fig. 566.

A. VARIABILIS Kützing 1843. Vodenicharov *et al.* 1971, p. 131, text fig.; Prescott 1962, pl. 118, fig. 9-10; Desikachary 1959, pl. 71, fig. 5; Forest 1954, fig. 635; Huber-Pestalozzi 1938, fig. 111; Geitler 1932, fig. 558; Tilden 1910, pl. 9, fig. 9; Wolle 1887, pl. 198, fig. 29-32.

A. VERRUCOSA Boye-Petersen 1923. Prescott 1962, pl. 118, fig. 11, 12; Huber-Pestalozzi 1938, fig. 152 D; Geitler 1932, fig. 570 b.

ANABAENOPSIS Miller 1923

Anabaenopsis elenkini Miller 1923. Akinetes ovoid to spherical,

8-11 μ broad; vegetative cells ellipsoidal or ovate, 4-6 μ in width; heterocysts spherical, 4-7 μ in diameter. ILLUSTRATIONS - Proschkina-Lavrenko *et* Makarova 1968, fig. 27; Prescott 1962, pl. 131, fig. 4; G. M. Smith 1950, fig. 500.

APHANOCAPSA Nägeli 1849

KEY TO SPECIES

1a Endophytic cells in mucilage of host alga ..... *A. ENDOPHYTICA*

1b Cells free-living (not endophytic) 2

2a (1) Cells coccoid, about 1 μ in diameter or less ... *A. DELICATISSIMA*

2b Cells larger in diameter (1.5-3 μ) ..... *A. ELACHISTA*

ILLUSTRATIONS

A. DELICTISSIMA West *et* West 1912. Prescott 1962, pl. 101, fig. 8-9; Huber-Pestalozzi 1938, fig. 11; Geitler 1932, fig. 69 c, d; West *et* West 1912, pl. 19, fig. 2-3

A. ELACHISTA West *et* West 1895. Desikachary 1959, pl. 21, fig. 5; Prescott 1954, fig. 320 b; Huber-Pestalozzi 1938, fig. 7; Geitler 1932, fig. 69b; Tilden 1910, pl. 2, fig. 6

A. ENDOPHYTICA G. M. Smith 1920. Prescott 1962, pl. 101, fig. 13; Huber-Pestalozzi 1938, fig. 12; Geitler 1932, fig. 69 a

APHANOTHECE Nägeli 1849

KEY TO SPECIES

1a Vegetative cells 2 μ or less across 2

1b Vegetative cells more than 2 μ across 3

2a (1) Cells 1-1 1/2 μ across, about 1/2 the length ..... *A. NIDULANS*

2b Cells 1.5-2.5 μ across (rarely less than 1.5 μ in diameter), up to 3 times as long as wide ..... *A. SAXICOLA*

3a (1) Cells not cylindrical (globose or ovate) ..... *A. GELATINOSA*

3b Cells cylindrical, up to 3 times as long as wide 4

4a (3) Colonies very pale gray or blue green; cells of colonies with inconspicuous sheaths ..... *A. MICROSCOPICA*

4b Colonies bright olive or yellow green; individual cells of colonies with sheath often apparent ..... *A. MICROSPORA*

ILLUSTRATIONS

A. GELATINOSA Lemmermann 1910. Prescott 1962, pl. 104, fig. 8

A. MICROSCOPICA Nägeli 1849. Vodenicharov *et al.* 1971, p. 64, text fig.; Prescott 1962, pl. 104, fig. 9-10; Desikachary 1959, pl. 22, fig. 4, 5, 9; Huber-Pestalozzi 1938, fig. 21; Geitler 1932, fig. 79; Tilden 1910, pl. 2, fig. 12

A. MICROSPORA Rabenhorst 1863. Prescott 1962, pl. 105, fig. 7-9; Huber-Pestalozzi 1938, fig. 20

A. NIDULANS Richter 1884. Bourrelly 1970, pl. 82, fig. 7; Prescott 1962, pl. 104, fig. 2-3; Desikachary 1959, pl. 22, fig. 1; Huber-Pestalozzi 1938, fig. 19; Geitler 1932, fig. 75 c

A. SAXICOLA Nägeli 1849. Prescott 1962, pl. 104, fig. 1; Desikachary 1959, pl. 22, fig. 11; Frémy 1929, fig. 28.

CALOTHRIX C. A. Agardh 1824

KEY TO SPECIES

1a Without akinetes (mature resting spores) 2

1b Akinetes present ..... *C. STAGNALIS*

2a (1) Cells very short, width about 3 1/2 to 5 times as much as length ..... *C. BREVIARTICULATA*

2b Cells longer and with colorless sheath ..... *C. EPIPHYTICA*

ILLUSTRATIONS

C. BREVIARTICULATA West *et* West 1897. Prescott 1962, pl. 132, fig. 1; Desikachary 1959, pl. 110, fig. 9; Elenkin 1949, fig. 321; Geitler 1932, fig. 389; Frémy 1929, fig. 223

C. EPIPHYTICA West *et* West 1897. Prescott 1962, pl. 132, fig. 2-3;

Prescott 1954, fig. 275 a

C. STAGNALIS Gomont 1895a. Vodenicharov *et al.* 1971, p. 119, text fig.; Prescott 1962, pl. 132, fig. 7; Elenkin 1949, fig. 323; Geitler 1932, fig. 377; Geitler 1925a, fig. 277; Tilden 1910, pl. 17, fig. 8-9; Gomont 1895, fig. 1, 2 (B-F).

CHAMAESIPHON Braun *et* Grunow *in* Rabenhorst 1865

Chamaesiphon curvatus Nordstedt 1878. Epiphytic thallus, pale violet, conspicuously curved or twisted with constricted base. Cells elongated, cylindrical, about 4 μ in diameter, up to 65 μ long. ILLUSTRATIONS - Vodenicharov *et al.* 1971, p. 88, text fig.; Bourrelly 1970, pl. 89, fig. 5-6; Prescott 1962, pl. 108, fig. 5-6; Desikachary 1959, pl. 33, fig. 1; Geitler 1932, fig. 244, 245; Tilden 1910, pl. 3, fig. 31

CHROOCOCCUS Nägeli 1849

KEY TO SPECIES

1a Cells large, more than 65 μ in diameter ..... *C. GIGANTEUS*

1b Cells less than 15 μ in diameter 2

2a (1) Cells with pale yellow color ..... *C. PALLIDUS*

2b Cells with blue green color 3

3a (2) Cells spherical or oblong, 5-10 μ in diameter, in pairs or in groups of pairs ..... *C. MINUTUS*

3b Cells irregularly truncated, angular or globose, less than 4 μ in diameter (usually more than 3 μ in diameter) ..... *C. MINOR*

ILLUSTRATIONS

C. GIGANTEUS W. West 1892. Desikachary 1959, pl. 26, fig. 1; Geitler 1932, fig. 109 a; W. West 1892, pl. 10, fig. 59, 60.

C. MINOR Nägeli 1849. Prescott 1962, pl. 100, fig. 12; Desikachary 1959, pl. 24, fig. 1; Geitler 1932, fig. 116 g; Fremy 1929, fig. 50; Tilden 1910, pl. 1, fig. 7.

C. MINUTUS Nägeli 1849. Vodenicharov *et al.* 1971, p. 71, text fig.;

Prescott 1962, pl. 100, fig. 9; Desikachary 1959, pl. 24, fig. 4; Frémy 1933, pl. 4, fig. 6; Geitler 1932, fig. 112 a, 113 c; Frémy 1929, fig. 42

C. PALLIDUS Nägeli 1849. Prescott 1962, pl. 100, fig. 14; Desikachary 1959, pl. 26, fig. 5; Geitler 1932, fig. 116 b; Frémy 1929, fig. 48

COELOSPHERIUM Nägeli 1849

Coelosphaerium dubium Grunow *in* Rabenhorst 1865. Cells 5-7 μ in diameter, aggregated into dense colonies. Colonies sphaerical or irregular with colonial mucilage about 4-7 μ thick. Colonies up to 300 μ in diameter. Euplanktonic. ILLUSTRATIONS - Prescott 1962, pl. 106, fig. 1; Huber-Pestalozzi 1938, fig. 47; Geitler 1932, fig. 121 f, 122 a

CYLINDROSPERMUM Kützing 1843

KEY TO SPECIES

1a	Akinetes solitary (rarely in pairs)	3
1b	Akinetes in series (usually more than two together)	2
2a (1)	Vegetative cells 4-5 μ in width, akinetes 8-10 μ in diameter	*C. CATENATUM*
2b	Vegetative cells less than 4 μ in width	*C. MARCHICUM*
3a (1)	Akinetes subcylindrical to cylindrical	4
3b	Akinetes ovoidal or ellipsoidal	*C. MUSCICOLA*
4a (3)	Cells about 2 μ in diameter; akinetes about 3.5-4.0 μ in diameter, about 8-9 μ long	*C. MINIMUM*
4b	Cells more than 3.5 μ in diameter (3.5-6 μ); akinetes 8-16 μ in diameter, about 20-40 μ long	*C. STAGNALE*

ILLUSTRATIONS

C. CATENATUM Ralfs 1850. Bourrelly 1970, pl. 121, fig. 8; Prescott 1962, pl. 122, fig. 9-10; Forest 1954, fig. 637; Tilden 1910, pl. 10, fig. 7

C. LICHENIFORME Kützing 1847. Prescott 1962, pl. 131, fig. 14;

Desikachary 1959, pl. 65, fig. 8; Forest 1954, fig. 638; Huber-Pestalozzi 1938, fig. 84; Geitler 1932, fig. 523 c

C. MARCHICUM Lemmermann 1910. Prescott 1962, pl. 122, fig. 13; Prescott 1954, fig. 295 b; Geitler 1932, fig. 523 c

C. MINIMUM G. S. West 1914. Prescott 1962, pl. 122, fig. 14, 15; G. S. West 1914, pl. 21, fig. 1-3; Tilden 1910, pl. 10, fig. 5

C. MUSCICOLA (MUSICOLA) Kützing 1845. Prescott 1962, pl. 122, fig. 16; Fott 1959, fig. 12, 4; Desikachary 1959, pl. 65, fig. 3; Forest 1954, fig. 640; G. M. Smith 1950, fig. 504; Geitler 1932, fig. 520 d; Frémy 1929, fig. 319; Tilden 1910, pl. 10, fig. 6

C. STAGNALE Bornet *et* Flahault 1888. Prescott 1962, pl. 122, fig. 17-18; Desikachary 1959, pl. 65, fig. 9; Huber-Pestalozzi 1938, fig. 87; Geitler 1932, fig. 520 c; Frémy 1929, fig. 311; Tilden 1910, pl. 10, fig. 2

DACTYLOCOCCOPSIS Hansgirg 1888

KEY TO SPECIES

1a Vegetative cells twisted and bent into clusters . *D. FASCICULARIS*

1b Vegetative cells not bent and twisted; cells straight, sharply pointed apices ..... *D. ACICULARIS*

ILLUSTRATIONS

D. ACICULARIS Lemmermann 1900. Prescott 1954, fig. 323 a; Huber-Pestalozzi 1938, fig. 65; Geitler 1932, fig. 138 c

D. FASCICULARIS Lemmermann 1898c. Vodenicharov *et al.* 1971, p. 57, text fig.; Prescott 1962, pl. 105, fig. 10-12; Desikachary 1959, pl. 29, fig. 3; Prescott 1954, fig. 323 b; Huber-Pestalozzi 1938, fig. 64; Geitler 1932, fig. 138 b

DICHOTHRIX Zanardini 1858

Dichothrix orsiniana Bornet *et* Flahault 1886. *(= Calothrix orsiniana).*

Vegetative cells compressed, 5-8 μ in diameter, 2-4 μ long; heterocysts terminal, hemispherical or globular. Trichomes about 10-14 μ wide at base and gently tapering to a fine point, enclosed in lamellated sheaths which enclose trichomes for almost their entire length. ILLUSTRATIONS - Bourrelly 1970, pl. 114, fig. 4; Prescott 1962, pl. 133, fig. 5-6; Desikachary 1959, pl. 107, fig. 4; G. M. Smith 1950, fig. 621; Geitler 1932, fig. 370; Frémy 1929, fig. 239; Tilden 1910, pl. 18, fig. 6

GLOEOCAPSA Kützing 1843

KEY TO SPECIES

1a Sheaths brownish or yellowish brown to pale orange . *G. RUPESTRIS*

1b Sheaths colorless or red to reddish brown 2

2a (1) Colonies up to 300 μ in diameter; cells including sheath 7.5-16 μ in diameter ..... *G. MAGMA*

2b Colonies about 25 μ in diameter; cells including sheath 3.5-7 μ in diameter ..... *G. PUNCTATA*

ILLUSTRATIONS

G. MAGMA Kützing 1846. Desikachary 1959, pl. 24, fig. 13; G. M. Smith 1950, f-g. 454; Geitler 1932, fig. 93, Frémy 1929, fig. 57; Tilden 1910, pl. 1, fig. 29; Wolle 1887, pl. 210, fig. 26-31; Kützing 1846, pl. 22, fig. 1

C. PUNCTATA Nägeli 1849. Prescott 1962, pl. 101, fig. 7; Desikachary 1959, pl. 23, fig. 2; Prescott 1954, fig. 315; Nägeli 1849, pl. 1F, fig. 6

C. RUPESTRIS Kützing 1845-1849. Bourrelly 1970, pl. 83, fig. 8; Prescott 1962, pl. 107, fig. 13; Geitler 1932, fig. 88 c, 89; Frémy 1929, fig. 56; Tilden 1910, pl. 1, fig. 24; Wolle 1887, pl. 210, fig. 22, 28

HAPALOSIPHON Nägeli 1849

KEY TO SPECIES

1a Filaments randomly or irregularly branched from various positions along the main axis 2

1b Filaments usually branched from one side of the main axis (rarely from both sides) ..... *H. AUREUS*

2a (1) Heterocysts and cells elliptical; filaments less than 9 μ (7-9 μ) in diameter ..... *H. FLEXUOSUS*

2b Heterocysts and cells cylindrical or quadrate; filament more than 15 μ in diameter (15-20 μ) ..... *H. CONFERVACEUS*

ILLUSTRATIONS

H. AUREUS West *et* West 1897. Prescott 1962, pl. 128, fig. 1-3; Geitler 1932, fig. 335

H. CONFERVACEUS Borzi 1892. Prescott 1962, pl. 128, fig. 4

H. FLEXUOSUS Borzi 1892. Prescott 1962, pl. 128, fig. 5, 6

LYNGBYA C. A. Agardh 1824

KEY TO SPECIES

1a Filaments coiled or twisted, sometimes entangled about other algae 2

1b Filaments straight, bent, curved or entangled, but not coiled 3

2a (1) Filaments not twisted and entangled about other algae; trichomes irregularly coiled and twisted ..... *L. LAGERHEIMIA*

2b Filaments twisted and tangled about other algae and plants ..... *L. EPIPHYTICA*

3a (1) Filaments less than 20 μ in diameter 5

3b Filaments more than 20 μ in diameter 4

4a (3) Filaments associated with other algae, occurring as a plant mass or aggregation; not truly planktonic ..... *L. AESTUARII*

4b Euplanktonic filaments, solitary, 20-24 μ in diameter . *L. BIRGEI*

5a (3) Filaments more than 11 μ (11-16 μ) in diameter 6

5b Filaments less than 11 μ in diameter ..... *L. SPIRULINOIDES*

6a (5) Plant body composed of dense mat or layer of very entangled filaments ..... *L. VERSICOLOR*

6b Plants epiphytic; not forming a conspicuous mat or layer 7

7a (6) Filaments 10-20 μ in diameter ..... *L. MAJOR*

7b Filaments 5-10 μ in diameter ..... *L. AERUGINEO-CAERULEA*

ILLUSTRATIONS

L. AERUGINEO-CAERULA Gomont 1898. Prescott 1962, pl. 111, fig. 10, 11; Desikachary 1959, pl. 48, fig. 9; Elenkin 1949, fig. 489; Geitler 1932, fig. 670 f, g; Frémy 1929, fig. 157; Geitler 1925a, fig. 524; Tilden 1910, pl. 5, fig. 32, 33; Gomont 1892, pl. 4, fig. 1-3

L. AESTUARII Liebmann 1841. Proschkina-Lavrenko Makarova 1968, fig. 29, No. 9-10; Prescott 1962, pl. 111, fig. 8; Desikachary 1959, pl. 52, fig. 8; Forest 1954, fig. 580; Elenkin 1949, fig. 486; Huber-Pestalozzi 1938, fig. 211; Geitler 1932, fig. 666; Frémy 1929, fig. 152; Geitler 1925a, fig. 523; Tilden 1910, pl. 5, fig. 40, 41; Gomont 1892, pl. 3, fig. 1-2

L. BIRGEI G. M. Smith 1916a. Bourrelly 1970, pl. 129, fig. 4; Prescott 1962, pl. 111, fig. 8; Desikachary 1959, pl. 50, fig. 7, 8; Forest 1954, fig. 581; G. M. Smith 1950, fig. 492 B; Elenkin 1949, fig. 493; Geitler 1932, fig. 663; Geitler 1925a, fig. 505; G. M. Smith 1920, pl. 7, fig. 14-15; G. M. Smith 1916a, pl. 26, fig. 28.

L. EPIPHYTICA Hieronymus *in* Kirchner 1900 (*non* Wille). Bourrelly 1970, pl. 129, fig. 9; Prescott 1962, pl. 112, fig. 2, 3; Desikachary 1959, pl. 53, fig. 7; Elenkin 1949, fig. 460, 461 a; Geitler 1932, fig. 656 d; Frémy 1929, fig. 162; Lemmermann 1904, pl. 1, fig. 10.

L. LAGERHEIMII (LAGERHEIMIA) Gomont 1890. Whitford and Schumacher 1973, pl. 61, fig. 56; Cocke 1967, fig. 123; Prescott 1962, pl. 112, fig. 5, 6; Desikachary 1959, pl. 48, fig. 6; Forest 1954, fig. 583; Elenkin 1949, fig. 462; Huber-Pestalozzi 1938, fig. 203; Geitler 1932, fig. 661 g-i; Frémy 1929, fig. 170; Geitler 1925a, fig. 500, 506; Tilden 1910, pl. 5, fig. 22-23; Gomont 1892, pl. 4, fig. 6-7.

L. MAJOR Meneghini 1837. Whitford and Schumacher 1973, pl. 61, fig. 53; Vodenicharov *et al.* 1971, p. 153, text fig.; Cocke 1967, fig. 145; Prescott 1962, pl. 112, fig. 10; Desikachary 1959, pl. 52, fig. 11;

Elenkin 1949, fig. 479 a; Geitler 1932, fig. 679 a; Geitler 1925a, fig. 516; Gomont 1892, pl. 3, fig. 15

L. SPIRULINOIDES Gomont 1890. Whitford and Schumacher 1973, pl. 61, fig. 60; Bourrelly 1970, pl. 130, fig. 3; Cocke 1967, fig. 124; Prescott 1962, pl. 131, fig. 1; Desikachary 1959, pl. 52, fig. 4, 5; Elenkin 1949, fig. 465; Huber-Pestalozzi 1938, fig. 205; Geitler 1932, fig. 658; Geitler 1925a, fig. 503; Tilden 1910, pl. 5, fig. 47; Gomont 1892, pl. 3, fig. 18-19

L. VERSICOLOR Gomont 1892. Cocke 1967, fig. 135; Prescott 1962, pl. 113, fig. 4; Desikachary 1959, pl. 53, fig. 6; Forest 1954, fig. 587; Elenkin 1949, fig. 461 c; Huber-Pestalozzi 1938, fig. 212; Geitler 1932, fig. 656 f; Frémy 1929, fig. 164; Geitler 1925a, fig. 514; Tilden 1910, pl. 5, fig. 35; Gomont 1892, pl. 4, fig. 4-5

MICROCOLEUS Desmazières 1823

KEY TO SPECIES

1a Capitate apical cell present ..... *M. VAGINATUS*

1b Capitate apical cell absent 2

2a (1) Soil plants, trichomes greater than 5 μ in diameter, cells without constricted cross walls ..... *M. PALUDOSUS*

2b Aquatic plants, trichomes 4-5 in diameter, cells with constricted cross walls ..... *M. LACUSTRIS*

ILLUSTRATIONS

M. LACUSTRIS Farlow (*in* Farlow, Anderson *et* Eaton) 1877. (Algae Amer. Bor. Exsic.). Whitford and Schumacher 1973, pl. 61, fig. 71; Bourrelly 1970, pl. 134, fig. 5; Prescott 1962, pl. 113, fig. 6; Desikachary 1959, pl. 60, fig. 4, 5; Forest 1954, fig. 588; Prescott 1954, fig. 283 b; Elenkin 1949, fig. 535; Geitler 1932, fig. 749, 750 a; Frémy 1929, fig. 81.

M. PALUDOSUS Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 72; Cocke 1967, fig. 173; Prescott 1962, pl. 113, fig. 5; Fott 1959, fig. 13, no. 7; Desikachary 1959, pl. 56, fig. 2; Forest 1954, fig.

589; Elenkin 1949, fig. 529 a; Geitler 1932, fig. 753; Frémy 1929, fig. 80; Geitler 1925a, fig. 559; Tilden 1910, pl. 6, fig. 30; Gomont 1892, pl. 14, fig. 13

M. VAGINATUS Gomont 1890. Whitford and Schumacher 1973, pl. 61, fig. 70; Bourrelly 1970, pl. 134, fig. 1-2; Cocke 1967, fig. 166; Prescott 1962, pl. 131, fig. 2; Desikachary 1959, pl. 56, fig. 3; Forest 1954, fig. 591; Prescott 1954, fig. 283 a; G. M. Smith 1950, fig. 459; Elenkin 1949, fig. 529 b; Geitler 1932, fig. 741; Frémy 1929, fig. 79; Geitler 1925a, fig. 558; Tilden 1910, pl. 6, fig. 29; Gomont 1892, pl. 14, fig. 12.

NOSTOC Vaucher 1803

KEY TO SPECIES

1a Trichomes not in hollow and leathery colonies 2

1b Trichomes in peripheral areas of thick leathery mucilage forming hollow colonies; colonies brownish to olive green . *N. VERRUCOSUM*

2a (1) Colonies with a globular, dense and firm outer membrane 3

2b Colonies delicate, soft, amorphous, without conspicuous outer membrane 4

3a (2) Thallus occurring on damp soil ..... *N. COMMUNE*

3b Thallus growning in water ..... *N. PRUNIFORME*

4a (2) Trichomes twisted and entangled, obscuring the filamentous arrangement ..... *N. FUNCTIFORME*

4b Trichomes not so twisted and entangled 5

5a (4) Aquatic plants, in ividual sheaths not apparent; vegetative cells less than 5 μ in diameter 6

5b Terrestrial plants, individual sheaths conspicuous; vegetative cells 5-8 μ in diameter ..... *N. MICROSCOPICUM*

6a (5) Glososе heterocysts up to twice the size of normal vegetative cells; cells spherical or globose ..... *N. COMMINUTUM*

6b Elongated and barrel-shaped heterocysts, slightly larger than normal vegetative cells which are globose or ovoid .... *N. SPONGIAEFORME*

ILLUSTRATIONS

N. COMMINUTUM Kützing 1850. Cocke 1967, fig. 194; Prescott 1962, pl. 119, fig. 12

N. COMMUNE Vaucher 1803. Whitford and Schumacher 1973, pl. 62, fig. 1 a; Cocke 1967, fig. 199; Prescott 1962, pl. 119, fig. 13; Fott 1959, fig. 12, no. 3; Desikachary 1959, pl. 68, fig. 3; Forest 1954, fig. 643; Frémy 1933, pl. 58, fig. 3; Geitler 1932, fig. 536-537; Frémy 1929, fig. 283; Tilden 1910, pl. 8, fig. 1

N. MICROSCOPICUM Carmichael *ex* Harvey *in* Hooker 1833. Whitford and Schumacher 1973, pl. 62, fig. 2; Vodenicharov *et al.* 1971, p. 141, text fig.; Cocke 1967, fig. 200; Prescott 1962, pl. 120, fig. 3-5; Forest 1954, fig. 648; Frémy 1929, fig. 287

N. PRUNIFORME C. A. Agardh 1812. Vodenicharov *et al.* 1971, p. 143, text fig.; Prescott 1962, pl. 120, fig. 7-8; Prescott 1954, fig. 300a; Geitler 1932, fig. 548; Frémy 1929, fig. 288; Tilden 1910, pl. 8, fig. 9-10; Wolle 1887, pl. 197, fig. 5-7

N. PUNCTIFORME Hariot 1891. Whitford and Schumacher 1973, pl. 62, fig. 8; Vodenicharov *et al.* 1971, p. 138, text fig.; Cocke 1967, fig. 192; Prescott 1962, pl. 121, fig. 4-5; Desikachary 1959, pl. 69, fig. 1; Huber-Pestalozzi 1938, fig. 103; Frémy 1929, fig. 274; Tilden 1910, pl. 6, fig. 35-37

N. SPONGIFORME C. A. Agardh 1824. Vodenicharov *et al.* 1971, p. 139, text fig.; Cocke 1967, fig. 196; Prescott 1962, pl. 121, fig. 11-13; Tiffany and Britton 1952, fig. 1150; Huber-Pestalozzi 1938, fig. 96; Geitler 1932, fig. 531; Frémy 1929, fig. 337; Tilden 1910, pl. 7, fig. 4, 5

N. VERRUCOSUM Vaucher 1803. Vodenicharov *et al.* 1971, p. 142, text fig.; Prescott 1962, pl. 121, fig. 11-13; Tiffany and Britton 1952, fig. 1155; Huber-Pestalozzi 1938, fig. 98; Geitler 1932, fig. 542; Tilden 1910, pl. 8, fig. 11-16; Wolle 1887, pl. 197, fig. 1

OSCILLATORIA Vaucher 1803

KEY TO SPECIES

1a Trichomes 2 μ or less in diameter ..... *O. ANGUSTISSIMA*

1b Trichomes more than 2 μ (2-10 μ) in diameter 2

2a (1) Trichomes less than 5 μ in diameter 3

2b Trichomes 5-10 μ in diameter 4

3a (2) Apical cell not capitate ..... *O. SUBBREVIS*

3b Apical cell capitate (with a flattened calyptra) ... *O. PROLIFICA*

4a (2) Cells cylindrical, longer than wide ..... *O. HAMELII*

4b Cells with approximately equal length and width, quadrate .... *O. ORNATA*

ILLUSTRATIONS

O. ANGUSTISSIMA West *et* West 1897. Whitford and Schumacher 1973, pl. 61, fig. 10; Cocke 1967, fig. 92; Prescott 1962, pl. 109, fig. 5

O. HAMELII Frémy 1930. Prescott 1962, pl. 109, fig. 14; Frémy 1930, fig. 187

O. ORNATA Kützing 1849. Cocke 1967, fig. 74; Desikachary 1959, pl. 37, fig. 12; pl. 40, fig. 3; Tiffany and Britton 1952, fig. 1077; Elenkin 1949, fig. 380 a; Huber-Pestalozzi 1938, fig. 173; Geitler 1932, fig. 599 a; Frémy 1929, fig. 179; Geitler 1925a, fig. 599 a; Tilden 1910, pl. 4, fig. 8; Gomont 1892, pl. 6, fig. 15

O. PROLIFICA Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 26; Cocke 1967, fig. 98; Tiffany and Britton 1952, fig. 1083; Elenkin 1949, fig. 406 b; Huber-Pestalozzi 1938, fig. 189; Geitler 1932; Geitler 1925a, fig. 448; G. M. Smith 1920, pl. 7, fig. 3-5; Tilden 1910, pl. 4, fig. 1; Gomont 1892, pl. 6, fig. 8

O. SUBBREVIS Schmidle 1901a. Prescott 1962, pl. 107, fig. 23; Desikachary 1959, pl. 37, fig. 2, pl. 40, fig. 1; Geitler 1932, fig. 601 b; Frémy 1929, fig. 174

PHORMIDIUM Kützing 1843

KEY TO SPECIES

1a Trichomes short and endophytic within other algae (especially *Microcystis*) ..... *P. MUCICOLA*

1b Trichomes long and not endiphytic 2

2a (1) Trichomes with constricted cross walls ..... *P. LUCIDUM*

2b Trichomes without constrictions at cross walls ..... *P. CORICUM*

ILLUSTRATIONS

P. CORIUM Gomont 1890. Whitford and Schumacher 1973, pl. 60, fig. 34; Cocke 1967, fig. 111; Desikachary 1959, pl. 44. fig. 10-11; Forest 1954, fig. 608; Elenkin 1949, fig. 441 b, c: Geitler 1932, fig. fig. 649 b, c; Frémy 1929, fig. 133; Geitler 1925a, fig. 487; Tilden 1910, pl. 4, fig. 71-72; Gomont 1892, pl. 5, fig. 1-2

P. LUCIDUM Kützing 1843. Desikachary 1959, pl. 44, fig. 17, 18; Geitler 1932, fig. 648 f-h; Frémy 1929, fig. 129; Gomont 1892, pl. 5, fig. 11-12; Kützing 1845-1849, pl. 46, fig. 1

P. MUCICOLA (MUSCICOLA) Huber-Pestalozzi *et* Naumann 1929. Prescott 1962, pl. 4-5; Desikachary 1959, pl. 15, fig. 13; Elenkin 1949, fig. 450; Huber-Pestalozzi 1938, fig. 198; Geitler 1932, fig. 627; Huber-Pestalozzi *et* Naumann 1929, fig. 1-6

PLECTONEMA Thuret 1875

KEY TO SPECIES

1a Coarse filaments rarely branched, greater than 28 μ in diameter ..... *P. WOLLEI*

1b Filaments with branching commonly present, less than 28 in diameter 2

2a (1) Thallus forming tufts or fascicles ..... *P. TENUE*

2b Thallus solitary or with mucus layers 3

3a (2) Filaments more than 3.5 μ in diameter, purplish .... *P. PURPUREUM*

3b Filaments less than 3.5 μ in diameter, blue green .... *P. NOTATUM*

ILLUSTRATIONS

P. NOTATUM Schmidle 1902. Bourrelly 1970, pl. 110, fig. 7; Prescott 1962, pl. 126, fig. 6-7; Desikachary 1959, pl. 83, fig. 5; Elenkin 1949, fig. 544; Woronichin 1932, pl. 5, fig. 32; Schmidle 1902, fig. 8, 9

P. PURPUREUM Gomont 1892. Bourrelly 1970, pl. 110, fig. 8; Prescott 1962, pl. 126, fig. 8; Geitler 1932, fig. 444; Geitler 1925a, fig. 297; Gomont 1892, pl. 1, fig. 7, 8

P. TENUE Thuret 1875. Prescott 1962, p. 126, fig. 9; Elenkin 1949, fig. 547; Geitler 1932, fig. 448; Geitler 1925a, fig. 296; Tilden 1910, pl. 11, fig. 1-2; Gomont 1892, pl. 1, fig. 5-6

P. WOLLEI Farlow 1877. Prescott 1962, pl. 127, fig. 1; Desikachary 1959, pl. 83, fig. 1; Forest 1954, fig. 620; Prescott 1954, fig. 276; Elenkin 1949, fig. 538; Geitler 1932, fig. 439; Frémy 1929, fig. 144; Geitler 1925a, fig. 292; Tilden 1910, pl. 11, fig. 4-5; Farlow *ex* Gomont 1892, pl. 1, fig. 1

RHABDODERMA Schmidle *et* Lauterborn *in* Schmidle 1900

KEY TO SPECIES

1a Cells more than 5 μ in length, sometimes curved, but not sigmoid ..... *R. LINEARE*

1b Cells 5 μ or less in length, sigmoid ..... *R. IRREGULARE*

ILLUSTRATIONS

R. IRREGULARE Geitler 1925a. Prescott 1962, pl. 103, fig. 9-10; Huber-Pestalozzi 1938, fig. 61 C; Geitler 1932, fig. 135 b

R. LINEARE Schmidle *et* Lauterborn *in* Schmidle 1900. Prescott 1962, pl. 103, fig. 11, 12; Prescott 1954, fig. 326; G. M. Smith 1950, fig. 463; Huber-Pestalozzi 1938, fig. 60; Geitler 1932, fig. 135 a, 136; Schmidle 1900, pl. 6, fig. 8-11

RIVULARIA C. A. Agardh 1824

KEY TO SPECIES

1a Cells of trichome usually with length and width approximately equal (quadrate), with bent apex ..... *R. DURA*

1b Cells of trichome becoming much longer than wide at apex; apex not blunt 2

2a (1) Cells 9-13 in diameter; colonies of filaments without lime incrustations; sheaths colorless or yellow ..... *R. MINUTULA*

2b Cells less than 9 in diameter; colonies of filaments with conspicuous lime incrustations; sheaths colorless or brownish ..... *R. HAEMATITES*

ILLUSTRATIONS

R. DURA Roth 1802 (Neue Beitr. Bot., S. 273). Vodenicharov *et al.* 1971, p. 115, text fig.; Desikachary 1959, pl. 115, fig. 2; G. M. Smith 1950, fig. 522; Elenkin 1949, fig. 347; Frémy 1929, fig. 242; Geitler 1925a, fig. 286; Wolle 1887, pl. 79, fig. 1-3

R. HAEMATITES C. A. Agardh 1824. Bourrelly 1970, pl. 116, fig. 5, pl. 117, fig. 1-3, pl. 119, fig. 3; Prescott 1962, pl. 131, fig. 10-11; Elenkin 1949, fig. 342; Geitler 1932, fig. 45, 416, 417; Geitler 1925a, fig. 289-290; Tilden 1910, pl. 20, fig. 11-14

R. MINUTULA Bornet *et* Flahault 1886. Prescott 1962, pl. 136, fig. 9; Tilden 1910, pl. 20, fig. 9

SCHIZOTHRIX Kützing 1843

KEY TO SPECIES

1a Sheaths yellow or yellowish brown colored 2

1b Sheaths colorless 3

1c Sheaths rose to reddish orange or reddish purple *S. PURPURASCENS*

2a (1) Trichomes 6-13 μ in diameter ..... *S. MUELLERI*

2b Trichomes about 2.5-3 μ in diameter ..... *S. FUSCESCENS*

3a (1) Filaments densely compacted to form protruding tufts . *S. FRIESII*

3b Filaments not forming tufts 4

4a (3) Trichomes 5-11 μ in diameter ..... *S. RIVULARIS*

4b Trichomes less than 5 μ in diameter 5

5a (4) Cells quadrate or with length greater than width ... *S. TINCTORIA*

5b Cells with width greater than length ..... *S. VAGINATA*

ILLUSTRATIONS

S. FRIESII Gomont 1892. (= *Symplocastrum friesii*). Whitford and Schumacher 1973, pl. 61, fig. 78; Bourrelly 1970, pl. 131, fig. 5-6; Cocke 1967, fig. 170; Prescott 1962, pl. 114, fig. 5; Desikachary 1954, fig. 624; Elenk n 1949, fig. 499, 500; Geitler 1932, fig. 685, 686; Frémy 1929, fig. 97; Geitler 1925a, fig. 532; Gomont 1892, pl. 9, fig. 1-2

S. FUSCESCENS Kützing 1843. Bourrelly 1970, pl. 134, fig. 6-7; Prescott 1962, pl. 114, fig. 4; Desikachary 1959, pl. 58, fig. 7-8; Elenkin 1949, p. 517; Geitler 1932, fig. 717; Frémy 1929, fig. 99; Geitler 1925a, fig. 548; Gomont 1892, pl. 11, fig. 4-6

S. MUELLERI Nägeli *in* Kützing 1849. Whitford and Schumacher 1973, pl. 61, fig. 32; Bourrelly 1970, pl. 131, fig. 7-8, pl. 132, fig. 1; Cocke 1967, fig. 163; Prescott 1962, pl. 114, fig. 1; Desikachary 1959, pl. 57, fig. 9, 10; Forest 1954, fig. 626; Geitler 1932, fig. 715; Geitler 1925a, fig. 544; Tilden 1910, pl. 6, fig. 23; Gomont 1892, pl. 10, fig. 5-7

S. PURPURASCENS Gomont 1892. Whitford and Schumacher 1973, pl. 61, fig. 83; Cocke 1967, fig. 119; Desikachary 1959, pl. 57, fig. 3-5; Tiffany and Britton 1952, fig. 1115-1117, 1120-1121; G. M. Smith 1950, fig. 497; Elenkin 1949, fig. 515; Geitler 1932, fig. 709; Frémy 1929, fig. 106; Geitler 1925a, fig. 543; Tilden 1910, pl. 6, fig. 20-21

S. RIVULARIS Drouet 1942a. Cocke 1967, fig. 164; Prescott 1962, pl. 114, fig. 2-3

S. TINCTORIA Gomont 1890. (= *Inactis tinctoria*). Prescott 1962, pl. 131, fig. 7-8; Elenkin 1949, fig. 513; Geitler 1932, fig. 703; Tilden 1910, pl. 6, fig. 17; Gomont 1892, pl. 7, fig. 5-7

S. VAGINATA Gomont 1892. Vodenicharov *et al.* 1971, p. 149, text fig.;

Desikachary 1959, pl. 58, fig. 9-11; Elenkin 1949, fig. 511; Frémy 1933, pl. 19, fig. 5; Geitler 1932, fig. 696; Frémy 1929, fig. 93; Geitler 1925a, fig. 541; Gomont 1892, pl. 7, fig. 1-4

SCYTONEMA C. A. Agardh 1824

KEY TO SPECIES

1a	Sheaths very broad, with wing-like extensions	*S. ALATUM*
1b	Sheaths without conspicuous wing-like extensions	2
2a (1)	Sheaths lamellated, with divergent lamellations	3
2b	Sheaths not lamellated or with parallel lamellations	5
3a (2)	Filaments 18-38 μ in diameter; cells 6-12 μ wide	*S. MYCHROUS*
3b	Filaments less than 18 μ in diameter and with cells less than 6 μ wide	4
4a (3)	Filaments in floating aggregations and usually radiating from center, about 10-16 μ in diameter	*S. TOLYPOTHRICOIDES*
4b	Plants sessile, filaments 16-22 μ in diameter	*S. MIRABILE*
5a (2)	Cells short, width about 3 times the diameter, filaments very coarse, rarely branched	*S. CRISPUM*
5b	Cells with width less than 3 times the diameter, and with branching common	6
6a (5)	Filaments 18-24 μ across; subglobose or ovate heterocysts	*S. COACTILE*
6b	Filaments 12-16 μ across; cylindrical or quadrate heterocysts	*S. ARCHANGELII*

ILLUSTRATIONS

S. ALATA Borzi 1879. *(= Petalonema alatum).* Bourrelly 1970, pl. 111, fig. 3, pl. 113, fig. 2-3; Prescott 1962, pl. 123, fig. 4-5; Fott 1959, fig. 10, no. 3; Desikachary 1959, (pl. 4, fig. 1-3, 12); Forest 1954, fig. 658; Geitler 1932, fig. 505, 506

S. ARCHANGELLI (ARCANGELII) Bornet *et* Flahault 1887. Whitford and Schumacher 1973, pl. 62, fig. 25; Cocke 1967, fig. 225; Prescott

1962, pl. 123, fig. 6-7; Prescott 1954, fig. 300 a; G. M. Smith 1950, fig. 506; Geitler 1932, fig. 481

S. COATILE Montagne *in* Kützing 1849. Whitford and Schumacher 1973, pl. 62, fig. 27; Cocke 1967, fig. 223; Prescott 1962, pl. 124, fig. 1-3; Desikachary 1959, pl. 90, fig. 2; Geitler 1932, fig. 479

S. CRISPUM Bornet 1889. (= *Scytonema cincinnatum*). Whitford and Schumacher 1973, pl. 62, fig. 28; Vodenicharov *et al.* 1971, p. 100, text fig; Cocke 1967, fig. 223; Prescott 1962, pl. 124, fig. 4-6; Desikachary 1959, (pl. 93, fig. 1); Forest 1954, fig. 659; Tiffany and Britton 1952, fig. 1160, 1161; Geitler 1932, fig. 477; Tilden 1910, pl. 11, fig. 15; Wolle 1887, pl. 185, fig. 8-10

S. MIRABILE Bornet 1889. Whitford and Schumacher 1973, pl. 63, fig. 5; Vodenicharov *et al.* 1971, p. 102, text fig.; Cocke 1967, fig. 236; Prescott 1962, pl. 124, fig. 7-8; Desikachary 1959, p. 91, fig. 3; Geitler 1932, fig. 497, 498; Frémy 1929, fig. 269; Tilden 1910, pl. 13, fig. 2-5

S. MYOCHROUS C. A. Agardh 1824. Whitford and Schumacher 1973, pl. 63, fig. 6; Vodenicharov *et al.* 1971, p. 102, text fig.; Bourrelly 1970, pl. 110, fig. 1-2, pl. 118, fig. 2; Cocke 1967, fig. 239; Prescott 1962, pl. 124, fig. 9, pl. 125, fig. 1-2; Fott 1959, fig. 11, no. 2; Desikachary 1959, pl. 90, fig. 3, pl. 99, fig. 2; Forest 1954, fig. 663; Frémy 1933, pl. 54, fig. 2; Geitler 1932, fig. 47, 501-502; Tilden 1910, pl. 13, fig. 6

S. TOLYPOTHRICHOIDES Kützing 1849. Whitford and Schumacher 1973, pl. 63, fig. 9; Cocke 1967, fig. 237; Prescott 1962, pl. 123, fig. 8-9; Desikachary 1959, pl. 88, fig. 3, pl. 91, fig. 1; Forest 1954, fig. 665; Tiffany and Britton 1952, fig. 1158, 1159; Frémy 1929, fig. 267; Tilden 1910, pl. 13, fig. 1

SPIRULINA Turpin 1827

KEY TO SPECIES

1a Spirals 10-16 μ across ..... *S. PRINCEPS*

1b Spirals less than 10 μ across 2

2a (1) Spirals 4-6 μ across, loosely coiled 3

2b Spirals usually less 4 μ wide, with tight coils ..... *S. MAJOR*

3a (2) Trichome 2-2.5 μ in diameter ..... *S. LAXA*

3b Trichome less than 1 μ in diameter ..... *S. LAXISSIMA*

ILLUSTRATIONS

S. LAXA G. M. Smith 1916a. Whitford and Schumacher 1973, pl. 61, fig. 4; Cocke 1967, fig. 70; Prescott 1962, pl. 108, fig. 10; Huber-Pestalozzi 1938, fig. 168; G. M. Smith 1916a, pl. 26, fig. 25

S. LAXISSIMA G. S. West 1907. Proschkina-Lavrenko *et* Makarova 1968, fig. 31, no. 3; Prescott 1962, pl. 107, fig. 17; Desikachary 1959, pl. 36, fig. 5; Prescott 1954, fig. 270 a; Huber-Pestalozzi 1938, fig. 164; Frémy 1929, fig. 207; G. S. West 1907, pl. 9, fig. 6

S. MAJOR Kützing 1843. Whitford and Schumacher 1973, pl. 61, fig. 3; Cocke 1967, fig. 77; Prescott 1962, pl. 108, fig. 11; Desikachary 1959, pl. 36, fig. 13; Forest 1954, fig. 628; G. M. Smith 1950, fig. 485 A; Elenkin 1949, fig. 424; Huber-Pestalozzi 1938, fig. 165, 166; Geitler 1932, fig. 595; Frémy 1929, fig. 208; Geitler 1925a, fig. 412; Tilden 1910, pl. 4, fig. 46; Gomont 1892, pl. 7, fig. 29

S. PRINCEPS G. W. West 1907. Whitford and Schumacher 1973, pl. 61, fig. 2; Prescott 1968, pl. 11, fig. 141; Cocke 1967, fig. 69; Prescott 1962, pl. 108, fig. 13; Desikachary 1959, pl. 36, fig. 7; Forest 1954, fig. 629; Huber-Pestalozzi 1938, fig. 170; Geitler 1932, fig. 593 d; Frémy 1929, fig. 210

STIGONEMA C. A. Agardh 1824

KEY TO SPECIES

1a Filaments mostly one cell wide (uniseriate), individual cell sheaths and intercellular ("pit") connections are conspicuous ..... *S. OCELLATUM*

1b Filaments multiseriate (two or more cells wide) 2

2a (1) Filaments less than 40 μ wide; branches long and curved, usually terrestrial habitat ..... *S. TURFACEUM*

2b Filaments 40-70 μ wide, branches short and wide; usually aquatic habitat ..... *S. MAMILLOSUM*

ILLUSTRATIONS

S. MAMILLOSUM C. A. Agardh 1824. Whitford and Schumacher 1973, pl. 65, fig. 11; Bourrelly 1970, pl. 93, fig. 1-4, pl. 94, fig. 1; Cocke 1967, fig. 288; Prescott 1962, pl. 130, fig. 1-3; Desikachary 1959, pl. 135, fig. 3-6; Forest 1954, fig. 673; Geitler 1932, fig. 39, 320-324; Frémy 1929, fig. 336-337; Tilden 1910, pl. 15, fig. 22

S. OCELLATUM Thuret 1875. Whitford and Schumacher 1973, pl. 66, fig. 2; Bourrelly 1970, pl. 95, fig. 1-3; Prescott 1968, fig. 151; Cocke 1967, fig. 284; Prescott 1962, pl. 130, fig. 5, 6; Desikachary 1959, pl. 138, fig. 2; Geitler 1932, fig. 305-307; Tilden 1910, pl. 15, fig. 15-17

S. TURFACEUM Cooke 1884. Whitford and Schumacher 1973, pl. 66, fig. 6; Vodenicharov *et al.* 1971, p. 93, text fig.; Cocke 1967, fig. 287; Prescott 1962, pl. 129, fig. 5; Desikachary 1959, pl. 12, fig. 1-3, 14-17; Forest 1954, fig. 676; Prescott 1954, fig. 292 b; G. M. Smith 1950, fig. 512; Geitler 1932, fig. 318

SYMPLOCA Kützing 1843

Symploca muscorum Gomont 1890. Cells quadrate to cylindrical, 5-8 μ in diameter by 5-11 μ long; apical cell conspicuously domed or obconical; sheath thin; trichomes straight or undulating; filaments forming tufts or fascicles. ILLUSTRATIONS - Whitford and Schumacher 1973, pl. 61, fig. 6; Cocke 1967, fig. 150; Prescott 1962, pl. 113, fig. 7; Desikachary 1959, pl. 59, fig. 3-4; Prescott 1954, fig. 280; Forest 1954, fig. 631; G. M. Smith 1950, fig. 512; Elenkin 1949, fig. 456, 457 a; Fremy 1933, pl. 22, fig. 2; Geitler 1932, fig. 730; Geitler 1925a, fig. 497; Tilden 1910, pl. 15, fig. 20

TOLYPOTHRIX Kützing 1843

KEY TO SPECIES

1a Sheaths thick, thickness = or greater than diameter of trichome ..... *T. LIMBATA*

1b Sheaths thin, thickness of sheath less than the diameter of trichome 2

2a (1) Cells usually very short, discoid, 9-12 μ in diameter *T. DISTORTA*

2b Cells longer than wide or quadrate, less than 9 μ in diameter ..... *T. TENUIS*

ILLUSTRATIONS

T. DISTORTA Kützing 1843. Whitford and Schumacher 1973, pl. 63, fig. 11; Bourrelly 1970, pl. 107, fig. 4-6; Cocke 1967, fig. 245; Prescott 1962, pl. 25, fig. 5, 6; Desikachary 1959, pl. 102, fig. 1; Prescott 1954, fig. 303; Forest 1954, fig. 666; Geitler 1932, fig. 460; Tilden 1910, pl. 14, fig. 2-4; Wolle 1887, pl. 170, fig. 1-3

T. LIMBATA Thuret *in* Bornet *et* Flahault 1887. Whitford and Schumacher 1973, pl. 64, fig. 2; Cocke 1967, fig. 252; Prescott 1962, pl. 126, fig. 1, 2; Desikachary 1959, pl. 103, fig. 6; Geitler 1932, fig. 474 a

T. TENUIS J. Schmidt 1899. Whitford and Schumacher 1973, pl. 64, fig. 7; Cocke 1967, fig. 243; Desikachary 1959, pl. 102, fig. 4; Forest 1954, fig. 667; G. M. Smith 1950, fig. 507 A; Frémy 1933, pl. 53, fig. 2; Geitler 1932, fig. 458 a; Frémy 1929, fig. 251; Wolle 1887, pl. 181, fig. 5-7

APPENDIX 2

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APPENDIX 3

PROFILE SHEETS

A. NOTES ON PROFILE SHEETS

There is nothing absolute about the consensus for each spectrum of each species. The consensus equates only agreement, which may or may not be the actual case in reality. While the observation that there is no such thing as a taxonomic truth is true, it is even more evident in dealing with ecological interpretations which are based on taxonomic evaluations which are really nothing but a matter of opinion.

Whenever the consensus is not clear, a conservative estimation is made. Naturally, some bias is present in doing this. Sometimes the spread is so great that the only consensus is total indifference = no preference for any of the categories under consideration. In the consensus of the saprobien spectrum very often the term "Eurysaprobic" is used. In general, it denotes a wide tolerance for organic nutrients. Similarly in the nutrient spectrum, the term "Eurytrophic"(= wide tolerance for inorganic nutrients) is used often in the consensus. Often the consensus is brought to the lowest rank of category in the spectrum. (Example: If there are 8 references that state that an organism is planktonic, 3 that state that it is euplanktonic, and none that state that it is tychoplanktonic, then it is considered as euplanktonic in the consensus, since it can be only euplanktonic or tychoplanktonic in the specific case).

Caution was used not to overemphasize re-edited works by one author for fear of unduly biasing the consensus. Such works as those of Geitler (1925, 1932, 1942, etc.) essentially treat the ecology of the species the same. An attempt is made to get a good representation with respect to time, geographic origin, and investigators. Therefore, not all pertinent literature is covered; many times the "importance" of a particular piece of literature would have to take secondary consideration in favor of time, geographic origin, and investigator, particularly when trying to compress

all of these considerations into one profile sheet.

In many cases the nutrient spectrum doesn't correspond well with the saprobian spectrum or the current spectrum doesn't correspond well with the habitat spectrum. Example: The current spectrum consensus indicates "rheophilous" while the habitat spectrum consensus indicates "lakes and ponds." One of the reasons for this phenomenon may be the identifying of 2 or more ecologically divergent entities under the same name. On the other hand, it also could be due to errors, lack of consistent or comprehensive observation in the field by the various investigators, or even lack of enough investigation.

B. LEGEND

X = characteristic or category of spectrum attributed to the author indicated for the specific organism.

? = questionable

= implication, extrapolation, suggestion or other weak inference.

1 = capable of nitrogen fixation.

2 = dulcicole (= essentially oligohalobous)

3 = strongly eutrophic (= essentially polytrophic)

4 = has such an affinity for hard water that it may be used as an index organism of high pH!

5 = mesoeuryhaline (= living in association with 35 to perhaps 8-10 o/oo salt).

6 = sometimes found under ice.

7 = eurytrophic (= indifferent to inorganic nutrient content).

8 = psammonic (= living among sand grains which are often dampened with water).

9 = indicates high pH

a = sparse or rare or uncommon.

b = bloom forming

c = occurring in foul or sapropelic muds (= muds or colloidal aggregations of degradation products of complex organic materials).

d = ubiquitous (= omnipresent)

e = subaerial (see Bourrelly et Manguin 1954).

f = epizooic

g = in caves

h = tolerant of acid, soft water habitats (also see Prescott 1962, discussion under *Chroococcus limneticus*).

i = eutrophic-dyseutrophic (= conditions associated with lakes that apparently range between typical eutrophy and dyseutrophy; probably more nearly approaches eutrophic conditions. Compare with "n" below).

j = occurring in most of the 15 oligotrophic lakes of the Långan drainage area.

k = weakly flowing water

m = seston (= living or nonliving bodies which float or swim in water).

n = eurysaprobic (= ± indifferent to organic nutrient content).

o = only in nutrient poor lakes.

p = rarely euplanktonic

q = sphagnoxène (see Conrad 1942).

r = mixotrophic-eutrophic (mixotrophic = slightly eutrophic or approaching eutrophy as opposed to "saprotrophic" which tends to diverge from eutrophy toward saprobity (organic nutrients).

s = polythermous (see Czernin-Chudenitz 1955).

t = facultative in hot springs

u = hydrophytic, hydroterrestrial (hydrophytic = growing submersed in water; hydroterrestrial = growing on soil that is always damp).

v = thermophile and/or thermobiont (thermophile = having an affinity for thermal waters; thermobiont = diagnostic of thermal waters).

w = β polysaprobic (= zone characterized by low oxygen content but with hydrogen sulphide still present together with large phosphate content and perhaps considerable amounts of the ammonium ion).

x = epidendric (= living upon wood)

y = in sulphurous springs

z = endolithic (= ± epilithic, growing into rocks)

A = atmophyktisch (= ± aerophilous)

B = clean water form

C = associated with pollution

D = mesoeuryhaline (= living in association with 35 to perhaps 8-10 o/oo salt).

E = mostly eutrophic

F = semi-aërobiotic (see Boye-Petersen 1923)

G = hydrophytic, euterrestrial (hydrophytic = growing submersed in water; euterrestrial = true soil form).

H = in salt marshes

I = recorded from sewage treatment plants.

J = in rice fields

K = indicates industrial copper wastes.

L = indicates marine and estuarine pollution.

M = in mucilage of other algae

N = pseudoaerial (= growing on rocks, etc. with special water supply, such as waterfall spray).

O = eulittoral (= diagnostic of the littoral zone).

P = affinity for surfaces exposed to direct currents.

Q = rhéopétricole, petricolé (rhéopétricole = on rocks associated with flowing water; petricolé = epilithic).

R = tendency toward oligosaprobic conditions.

S = rare in standing waters.

LEGEND (Continued)

T = euterrestrial-hydroterrestrial (euterrestrial = in soil only moistened by atmospheric water; hydroterrestrial = growing on soil that is always damp).

U = associated with high levels of humus.

V = mesohumos (= essentially mesohumic, conditions associated with lakes that have an intermediate content of humus, between oligohumos and polyhumos).

W = in geysers

Y = sphagnophile (= affinity with *Sphagnum* type plants).

Z = favored by high organic content.

† = nutrient rich waters.

α = γ polysaprobic (= zone characterized by presence of small amount of hydrogen sulphide, a low oxygen saturation percentage and a decreasing NH_4^+ content).

β = rhéoxene (see Conrad 1942).

γ = lignotroph (see Järnefelt 1952)

δ = polyhumos (= essentially polyhumic, conditions associated with oligotrophic lakes which have a high humic acid content = "dystrophic phase".)

ε = hydropétricole, rhéopetricole (rhéopetricole = on rocks associated with flowing water; hydropétricole = on moist rocks).

ζ = not capable of fixing nitrogen.

η = dyseutrophic (= conditions associated with lakes trending between eutrophic and dystrophic; probably with noteworthy humus).

θ = neuston (= organisms associated with the surface film of water).

ι = polysaprobic when associated with *Beggiatoa*.

ψ = in an aquarium

Ω = rare in flowing waters.

LEGEND (Continued)

Author Abbreviation Code

All author abbreviations consist of only 3 character spaces. The first 3 letters of each author's name are used except:

1. When the author's name is hyphenated as in Huber-Pestalozzi = (H-P)
2. When the author's name is double as in Boye Petersen = (B-P)
3. When there are two authors of the paper under consideration as in Whitford and Schumacher = (W&S)
4. When there are three or more authors as in Guarrera *et al.* = (Gea)
5. When two different authors have the same name abbreviation, (in that case, the year of publication can be used to distinguish between the two)
6. When two different authors have the same name abbreviation and the year is the same, then an "a" is added to the year of one name to distinguish them, as in Petrova 1967 = (Pet), Petrov 1967 = (Pet 1967a)

Van = Certain of my own inferences are made from personal observations - these are included in the profile sheets without a date!

C. PROFILE SHEETS

AMPHITHRIX JANTHINA

		Til 1910	Gei 1932	Gei 1942	Pre 1962	Bro 1965	Bac 1967	Bac 1968	N&S 1973	Dor 1974	Sch 1975	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)											
	Oligosaprobic							X				EURYSAPROBIC
	Saprophilic											
	Saproxenous							X				
	Katharobic or Saprophobic							X				
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Euryhaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous		#			#						RHEOPHILOUS
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic								X			
	Lentic: Lakes & Ponds											
	Lentic: Bogs or Swamps				X							
	Lotic: Crenophilous (general)			X					X			
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams			X				X				
	Aerophilous or Terrestrial									X		PROBABLY EURYECIOUS
	Estuarine											
	Littoral (Litoral)	X										
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)											
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)					X	X					
	Epipelic											EPILITHIC
	Epilithic	X	X					X				
	Epiphytic											
	Other Periphytic											
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer							X				SUMMER
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

ANABAENA CIRCINALIS

		Til 1910	Sm 1920	Gel 1932	H-P 1938	Jar 1952	Tel 1955	Sku 1956	Des 1959	Fot 1959	Fre 1962	Kot 1967	Bit 1967	Bek 1968	Ure 1969	Val 1971	Lin 1972	McS 1973	Tho 1974	Tez 1974	Elo 1974	CONSENSUS
PH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
TROPHIC	Polytrophic																					
	Eutrophic						X	X									X					EUTROPHIC
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous	=		=	=				=													LIMNOPHILOUS
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds						X											X	X		X	LAKES & PONDS
	Lentic: Bogs or Swamps											X										
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																	X				
	Aerophilous or Terrestrial												—		X							
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X			X			X	X		X			X		X	X	X	X	X	X	PLANKTONIC
	Euplanktonic		X																			
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other			o	o				o													
SEASONS	Winter																					
	Spring																					
	Summer							X	X		X			X				X			X	SUMMER
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Hoshiak and Kennedy 1968 - stenochronic and eurychronic

ANABAENA CONSTRICTA

Geitler 1932 - "auf Faulschlamm"
Liebmann 1962 - facultative anaerob, insensitive to high H_2S concentrations
Louis et Peeters 1967 - 12-19° C; pH 7.3-7.4

		KM 1908	KO 1935	Lie 1951	Mez 1955	Tal 1959	Uer 1959	Jam 1959	Lie 1962	Lie 1964	Lie 1965a	Jam 1965	KO 1965	Mek 1966	Lez 1967	LeP 1967	HeS 1969	LeP 1970	SEL 1972		CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic	X	X	X	X				X	X	X							X			POLYSAPROBIC, SAPROBIONTIC
	Mesosaprobic																				
	alpha range (strong)				X																
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other					C															
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic								X	X											BENTHIC, RIVERS, STREAMS, TERRESTRIAL, etc.
	Lentic: Lakes & Ponds																				
	Lentic: Bags or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams													X							
	Aerophilous or Terrestrial																X				
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)							X			X										PLANKTONIC, PERIPHYTIC
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)													X				X			
	Epipelic																				
	Epilithic																				
	Epipnytic						X														
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter								X	X											ALL TIMES OF YEAR
	Spring															X					
	Summer												X								
	Fall								X	X						X					
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

ANABAENA CYLINDRICA

		Gel 1932	U-P 1938	Bor 1940	Hav 1944	Sin 1960	Sin 1961	Tal 1962	Fie 1964	CdM 1964	Fie 1965a	MS 1968	Hb.S 1969	Mat 1970	Cap 1972	Ste 1975					CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic				X	#															SAPROPHILIC
	Saprophilic								X		X										
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Eunalobous or Polynalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic								X		X										
	Lentic: Lakes & Ponds																				
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial			I			I	I		I		I	I		I						N fixer, TERRESTRIAL
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)	#	#			X									X						
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				PLANKTONIC
	Epilithic																				
	Epiphytic	X	X																		
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				FALL
	Fall					X								X							
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Singh 1960 - favored by low organic content; correlation with high nitrate & phosphate, high temperature & low CO_2 content.
Cairns, Lanza, and Parker 1972 - resistant to dieldrin, endrin, aldrin & p, p'-DDT at concentration 5, 10, 20 µg/ml.
Khoja and Whitton 1975 - combined N is not essential to growth.

ANABAENA FLOSAQUAE (First of 2 profile sheets)

		Bru 1905	Cla 1908	Kay 1908	Tai 1910	Ohl 1920	Ber 1923	Pro 1928	Ger 1932	Pil 1934	Ilg 1938	Sch 1959	Kis 1945	Geb 1946	Pre 1951	Ulr 1952	Ger 1955	Ger 1956	Pot 1959	Hes 1959	Hir 1961	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic															(x)						
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																	(x)				
	beta range (weak)																	x				
	Oligosaprobic			x														(x)				
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																x					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other												x			x						
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				(x)				(x)		(x)											
	Indifferent																					CONSENSUS ON FOLLOWING PAGE
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds		x		x	x	x			x							x			x		
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams						x													x		
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other													to								
SPECIFIC HABITAT	Planktonic (Pelagic)	x	x		x		x	x	x	x	x						x			x		
	Euplanktonic					x															x	
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																	(x)				
SEASONS	Winter			x	x																	
	Spring			x	x																	
	Summer			x	x							x										
	Fall			x																		
TEMPERATURE	Eutherma1																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Nesenburg-Lund 1908 - 16-18°C optimum

ANABAENA FLOSAQUAE (Last of 2 profile sheets)

Proschkina-Lavrenko et Makarova 1968 - .4-100/oo salt, 18-25.5°C

		Lan 1962	Lte 1962	Fre 1962	Cor 1964	C-C 1966	Bil 1967	Bak 1969	Lev 1970	Mat 1970	Sta 1971	Kek 1971	Val 1971	Sac 1971	Dif 1972	Pen 1973	Kri 1974	Ilm 1974	Ler 1974	Bon 1974	Sze 1975	CONSENSUS
pH	Acidobiontic																					ALKALIBIONTIC
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					β MESOSAPROBIC OR SAPROXENOUS
	Mesosaprobic																					
	alpha range (strong)		X													X						
	beta range (weak)		X													X						
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					EURYTROPHIC
	Eutrophic																			X	X	
	Mesotrophic																					
	Oligotrophic											X	X					X				
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					LIMNOPHILOUS
	Limnophilous		X																			
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					LAKES & PONDS, TERRESTRIAL
	Lentic: Lakes & Ponds	X		X									X									
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial				X		X		X													
	Estuarine																					
	Littoral (Litoral)																					
	Neristic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X		X		X	X		X		X		X	X	X	X				EUPLANKTONIC
	Euplanktonic	X																				
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic								X													
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					ALL TIMES OF YEAR
	Spring																					
	Summer		X				X	X	X		X				X							
	Fall				X			X	X													
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

ANABAENA INAEQUALIS

		Til 1910	Gei 1932	H-P 1938	Mee 1954	Des 1959	Alm 1963	L&O 1965	H&S 1969	W&S 1973	CONSENSUS
pH	Acidobiontic										
	Acidophilous										
	Indifferent										
	Alkaliphilous										
	Alkalibiontic										
	Unknown or other										
SAPROBIAN	Polysaprobic or Saprobiontic										
	Mesosaprobic										
	alpha range (strong)										
	beta range (weak)										
	Oligosaprobic										
	Saprophilic										
	Saproxenous										
	Katharobic or Saprophobic										
	Unknown or other										
NUTRIENT	Polytrophic										
	Eutrophic										
	Mesotrophic										DYSTROPHIC
	Oligotrophic										
	Dystrophic							≈			
	Unknown or other										
HALOBION	Euhalobous or Polyhalobous										
	Mesohalobous										
	alpha range (strong)										
	beta range (weak)										
	Oligohalobous										
	Halophilous										
	Indifferent										
	Halophobous										
	Euryhalobous or Euryhaline										
	Unknown or other										
CURRENT	Limnobiontic										
	Limnophilous		≈	≈		≈					LIMNOPHILOUS
	Indifferent										
	Rheophilous										
	Rheobiontic										
	Unknown or other										
GENERAL HABITAT	Benthic										
	Lentic: Lakes & Ponds	X			X	X				X	
	Lentic: Bogs or Swamps										
	Lotic: Crenophilous (general)										
	Lotic: Crenophilous (thermal)										
	Lotic: Rivers & Streams	X									LAKES & PONDS, TERRESTRIAL
	Aerophilous or Terrestrial						X	X		—	
	Estuarine										
	Littoral (Litoral)										
	Neritic										
	Oceanic										
	Eurytopic or Euryecious										
	Unknown or other										
SPECIFIC HABITAT	Planktonic (Pelagic)		≈		X						
	Euplanktonic										
	Tychoplanktonic										
	Periphytic (Aufwuchs)										PLANKTONIC
	Epipelic										
	Epilithic										
	Epiphytic		≈								
	Other Periphytic										
	Unknown or other										
SEASONS	Winter								X		
	Spring										WINTER, FALL
	Summer										
	Fall								X		
TEMPERATURE	Euthermal										
	Mesothermal										
	Oligothermal								X		OLIGOTHERMAL, METATHERMAL
	Stenothermal										
	Metathermal								X		
	Eurythermal										
	Unknown or other										

Louis et Olbrechts 1965 - 0-9.6°C, pH 4.5-5

ANABAENA MACROSPORA

Bozniak and Kennedy 1968 - intermittent stenochronic

		Bru 1903	Pro 1928	Gei 1932	H-P 1938	JMr 1952	Pre 1962	B&K 1968	CONSENSUS
pH	Acidobiontic								
	Acidophilous								
	Indifferent								
	Alkalipnilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic								
	Unknown or other								
NUTRIENT	Polytrophic								
	Eutrophic					E			
	Mesotrophic								
	Oligotrophic								EUTROPHIC
	Dystrophic								
	Unknown or other								
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligohalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Euryhalobous or Euryhaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous			≈	≈				
	Indifferent								LIMNOPHILOUS
	Rheophilous								
	Rheobiontic								
	Unknown or other								
GENERAL HABITAT	Benthic								
	Lentic: Lakes & Ponds						X	X	
	Lentic: Bogs or Swamps								
	Lotic: Crenophilous (general)								
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams								
	Aerophilous or Terrestrial								LAKES & PONDS
	Estuarine								
	Littoral (Litoral)								
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other								
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X	X	X		X	X	
	Euplanktonic								
	Tychoplanktonic								
	Periphytic (Aufwuchs)								
	Epipelic								PLANKTONIC
	Epilithic								
	Epiphytic								
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								
	Spring								
	Summer								
	Fall								
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

ANABAENA OSCILLARIOIDES

		Til 1910	Esm 1914	Bri 1919	Hod 1922	B-P 1923	Pro 1928	Cel 1932	H-P 1935	H-P 1938	Des 1959	Pre 1962	PAV 1965	Des 1967	Hes 1969	WEK 1971	WS 1973				CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic														#						OLIGOTROPHIC
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous	#																			
	Indifferent					#															INDIFFERENT
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X				X		X		X	X					X					
	Lentic: Bogs or Swamps							X		X		X									
	Lotic: Crenophilous (general)					X															
	Lotic: Crenophilous (thermal)							X		X											
	Lotic: Rivers & Streams	X				X								X							
	Aerophilous or Terrestrial	X	X			F		G							X						EURYECIOUS
	Estuarine																				
	Littoral (Litoral)						X					X									
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other					G															
SPECIFIC HABITAT	Planktonic (Pelagic)						X														
	Euplanktonic																				
	Tychoplanktonic												X								
	Periphytic (Aufwuchs)																				
	Epipelic																				
	Epilithic	X				X															EPIPHYTIC
	Epiphytic	X					X		X		X										
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring			X																	
	Summer															X					SPRING, SUMMER
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

ANABAENA PLANCTONICA

		1903 Bru	1920 Smi	1925 Fle	1932 Gei	1938 H-P	1939 Cai	1952 Jar	1954 Mce	1956 Sku	1957 Col	1959 RGB	1962 Pre	1964b Tam	1971 Val	1974 Bur	1975 KGS				CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkalinilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic							X				X									
	Mesotrophic																				
	Oligotrophic														X						EUTROPHIC
	Dystrophic																				
	Unknown or other																				
HALIBIOS	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Eurynalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds		X		X	X			X				X			X					
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial																				LAKES
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X	X	X		X	X	X		X	X	X		X					
	Euplanktonic		X																		
	Tychoplanktonic																				
	Peripnytic (Aufwuchs)																				
	Epipelic																				PLANKTONIC
	Epilithic																				
	Epipnytic																				
	Other Peripnytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer														X						SUMMER
	Fall									X	X										
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Netathermal																				
	Eurythermal																				
	Unknown or other																				

ANABAENA SPIROIDES

		Kof 1908	KEM 1908	Fre 1930	Ver 1932	Ger 1956	Kol 1952	Jar 1952	C&K 1954	S-H 1956	Jam 1959	Des 1959	Fot 1959	Sin 1960	Fie 1962	Sin 1968	McS 1969	UGR 1970	Nol 1972	Ker 1975	MGM 1976	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)									a												
	beta range (weak)									X					X				X			OLIGOSAPROBIC ?
	Oligosaprobic		X				X			a												a MESOSAPROBIC ?
	Saprophilic																					± INDIFFERENT
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other													a								
NUTRIENT	Polytrophic																				X	
	Eutrophic							X														
	Mesotrophic																					EUTROPHIC
	Oligotrophic																					
	Dystropnic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous				X																	
	alpha range (strong)																					
	beta range (weak)								X													
	Oligohalobous								X													EURYHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous								X													
	Eurynalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous			m		m																
	Indifferent																					
	Rheophilous																					LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds												X			X						
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams												X									
	Aerophilous or Terrestrial																X					PROBABLY ±
	Estuarine																					EURYECIOUS
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious										X											
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X		X			X		X					X						
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC
	Epilithic																	X				
	Epipnytic																					
	Other Peripnytic																					
	Unknown or other										m		b									
SEASONS	Winter													X		X						
	Spring													X								
	Summer													X				X		X	X	ALL TIMES OF YEAR
	Fall	X							X					X		X		X				
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Singh 1960 - correlation with low O_2 content
Whitford and Schumacher 1963 - optimum above 20°C

ANABAENA TORULOSA

		Til 1910	Cel 1952	H-P 1958	BOE 1940	Ing 1959	Tre 1962	Bou 1966	UES 1969	WAS 1973	HOF 1973	DTM 1973								CONSENSUS
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent																			
	Alkaliphilous																			
	Alkalibiontic																			
	Unknown or Other																			
SAPROBIAN	Polysaprobic or Saprobiontic																			
	Mesosaprobic																			
	alpha range (strong)																			
	beta range (weak)										X	X								
	Oligosaprobic																			β MESOSAPROBIC
	Saprophilic																			
	Saproxenous																			
	Katharobic or Saprophobic																			
	Unknown or other																			
NUTRIENT	Polytrophic																			
	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
	Unknown or other																			
HALIBION	Euhalobous or Polyhalobous																			
	Mesohalobous																			
	alpha range (strong)																			
	beta range (weak)																			
	Oligohalobous																			
	Halophilous																			
	Indifferent																			
	Halophobous																			
	Euryhalobous or Euryhaline																			
	Unknown or other																			
CURRENT	Limnobiontic																			
	Limnophilous	=	=	=																
	Indifferent																			LIMNOPHILOUS
	Rheophilous																			
	Rheobiontic																			
	Unknown or other																			
GENERAL HABITAT	Benthic	=						X												
	Lentic: Lakes & Ponds						X			X										
	Lentic: Bogs or Swamps	=																		
	Lotic: Crenophilous (general)																			
	Lotic: Crenophilous (thermal)																			
	Lotic: Rivers & Streams																			
	Aerophilous or Terrestrial	X			—				X											TERRESTRIAL
	Estuarine																			
	Littoral (Litoral)	=																		
	Neritic																			
	Oceanic																			
	Eurytopic or Euryecious																			
	Unknown or other																			
SPECIFIC HABITAT	Planktonic (Pelagic)									X										
	Euplanktonic																			
	Tychoplanktonic					X														
	Periphytic (Aufwuchs)																			
	Epipelic	X																		EPIPHYTIC
	Epilithic																			
	Epiphytic	X	X	X																
	Other Periphytic																			
	Unknown or other																			
SEASONS	Winter																			
	Spring																			
	Summer																			
	Fall																			
TEMPERATURE	Eutherman																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Unknown or other																			

ANABAENOPSIS TANGANYIKAE

Singh 1960 - correlation with low organic content and high O_2 content

		Ger 1932	H-P 1938	Mee 1954	Des 1959	Sin 1960	PSM 1968	Gez 1972	CONSENSUS
pH	Acidobiontic								
	Acidophilous								
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)								
	Oligosaprobic					x			± OLIGOSAPROBIC
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic								
	Unknown or other								
NUTRIENT	Polytropnic								
	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
	Unknown or other								
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligohalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Euryhalobous or Euryhaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
	Unknown or other								
GENERAL HABITAT	Benthic								
	Lentic: Lakes & Ponds	x	x	x	x		x		
	Lentic: Bogs or Swamps								
	Lotic: Crenophilous (general)								
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams								
	Aerophilous or Terrestrial								LAKES & PONDS
	Estuarine								
	Littoral (Litoral)								
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other								
SPECIFIC HABITAT	Planktonic (Pelagic)	x	x	x		x	x		
	Euplanktonic								
	Tychoplanktonic								
	Periphytic (Aufwuchs)								
	Epipelic								PLANKTONIC
	Epilithic								
	Epiphytic								
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								
	Spring								
	Summer								
	Fall								
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

APHANIZOMENON FLOSAQUAE (First of 2 profile sheets)

		Lem 1903	K&M 1908	Col 1932	Red 1935	H-P 1938	Cha 1939	Gab 1939	Cha 1940	Nys 1945	Kol 1950	Mar 1952	Cyk 1954	S-H 1956	Rux 1956	Col 1957	Fot 1959	Fre 1962	Lie 1962	Wut 1965	Ace 1966	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																	1				
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)												X	X								
	beta range (weak)		X								X					X		X	?			
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic											X						X				
	Mesotrophic														X		?					
	Oligotrophic																					
	Dystrophic											X										
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)												X	X								
	beta range (weak)											X										
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Eurynalobous or Euryhaline				=							X	?									
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		=		=																	
	Indifferent																					CONSENSUS ON FOLLOWING PAGE
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds			X				X							X							
	Lentic: Bogs or Swamps					X	X															
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X		X	X								X			X				
	Euplanktonic				X				X													
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other			b												b						
SEASONS	Winter					X											b					
	Spring																		X			
	Summer							X												X		
	Fall	X				X																
TEMPERATURE	Eutherma1																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Williams and Burris 1952 - not capable of N fixation
Boyd 1970 - not capable of N fixation

APHANIZOMENON FLOSAQUAE (Last of 2 profile sheets)

		Lip 1966	Tam 1967	Dut 1967	Pez 1967	Bek 1968	Mis 1969	SfG 1970	Slo 1970	Lev 1970	Sta 1971	Lin 1972	WgS 1973	PgM 1973	Ke1 1973a	Tez 1974	Ilm 1974	Elo 1974	Tho 1974	Sze 1975	MgM 1976	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					PROBABLY ALKALIBIONTIC
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)		X											X								β MESOSAPROBIC
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic															#						
	Eutrophic	X							X			X									X	EUTROPHIC
	Mesotrophic																					
	Oligotrophic																#					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					EURYHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Eurynalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous											#										
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X		X										X				X	X			
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					LAKES & PONDS
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)			X	X	X		X		X	X	X	X			X	X	X	X			
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					EUPLANKTONIC
	Epipelic																					
	Epilithic																					
	Epipnytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	winter																	X				
	Spring																					
	Summer		X		X	X	X	X		X		X		X						X	X	± SUMMER
	Fall			X								X								X	X	
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Proschkina-Lavrenko et Makarova 1968 - .2-12.5 o/oo salt; 25.8°C

APHANOCAPSA MONTANA

		Gei 1932	H&P 1958	Des 1959	Pal 1959	R&B 1959	Dur 1962	Bro 1965	Coc 1967	CONSENSUS
pH	Acidobiontic									
	Acidophilous									
	Indifferent									
	Alkaliphilous									
	Alkalibiontic									
	Unknown or other									
SAPROBIAN	Polysaprobic or Saprobiontic									PROBABLY SAPROXENOUS
	Mesosaprobic									
	alpha range (strong)									
	beta range (weak)									
	Oligosaprobic									
	Saprophilic									
	Saproxenous									
	Katharobic or Saprophobic									
	Unknown or other		—		C					
NUTRIENT	Polytrophic									OLIGOTROPHIC
	Eutrophic									
	Mesotrophic									
	Oligotrophic					X				
	Dystrophic									
	Unknown or other									
HALOBION	Euhalobous or Polyhalobous									
	Mesohalobous									
	alpha range (strong)									
	beta range (weak)									
	Oligohalobous									
	Halophilous									
	Indifferent									
	Halophobous									
	Euryhalobous or Euryhaline									
	Unknown or other									
CURRENT	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
	Unknown or other									
GENERAL HABITAT	Benthic									LAKES & PONDS, TERRESTRIAL
	Lentic: Lakes & Ponds					X	X			
	Lentic: Bogs or Swamps									
	Lotic: Crenophilous (general)									
	Lotic: Crenophilous (thermal)									
	Lotic: Rivers & Streams									
	Aerophilous or Terrestrial	X				X		X		
	Estuarine									
	Littoral (Litoral)									
	Neritic									
	Oceanic									
	Eurytopic or Euryecious									
	Unknown or other									
SPECIFIC HABITAT	Planktonic (Pelagic)									EPILITHIC
	Euplanktonic									
	Tychoplanktonic									
	Periphytic (Aufwuchs)			X						
	Epipelic									
	Epilithic	X					#	X		
	Epiphytic			X				X		
	Other Periphytic			X				X		
	Unknown or other									
SEASONS	Winter									
	Spring									
	Summer									
	Fall									
TEMPERATURE	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Unknown or other									

APHANOCAPSA PULCHRA

		Sm1 1920	Ge1 1932	H-P 1938	Gah 1939	Ge1 1942	Des 1959	Pre 1962	Go1 1967	BGK 1968	LGP 1970	WGK 1971	TET 1971	WES 1973	Mo0 1974a						CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic											=									± OLIGOTROPHIC
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Eurynalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X	X	X			X	X					X	X	X						LAKES & PONDS
	Lentic: Bogs or Swamps							X													
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams														X						
	Aerophilous or Terrestrial						=														
	Estuarine																				
	Littoral (Litoral)								X												
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)		=	=	X	X		X		X	X										TYCHOPLANKTONIC
	Euplanktonic																				
	Tychoplanktonic	X					X														
	Periphytic (Aufwuchs)		=	=																	
	Epipelic																				
	Epilithic														X						
	Epiphytic																				
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				SUMMER
	Spring																				
	Summer									X											
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

APHANOCAPSA RIVULARIS

		Wol 1887	Til 1910	Smi 1920	Gei 1932	H-P 1938	Con 1942	Tam 1959	Cla 1962b	Cla 1962a	Pre 1962	Fle 1964	Dor 1974	CONSENSUS
pH	Acidobiontic													
	Acidophilous													
	Indifferent													
	Alkaliphilous													
	Alkalibiontic													
	Unknown or other													
SAPROBIAN	Polysaprobic or Saprobiontic													SAPROPHOBIC
	Mesosaprobic													
	alpha range (strong)													
	beta range (weak)													
	Oligosaprobic													
	Saprophilic													
	Saproxenous													
	Katharobic or Saprophobic													
	Unknown or other											X		
NUTRIENT	Polytrophic													
	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
	Unknown or other													
HALOBION	Euhalobous or Polyhalobous													
	Mesohalobous													
	alpha range (strong)													
	beta range (weak)													
	Oligohalobous													
	Halophilous													
	Indifferent													
	Halophobous													
	Eurynalobous or Eurynaline													
	Unknown or other													
CURRENT	Limnobiontic													PROBABLY INDIFFERENT
	Limnophilous													
	Indifferent								#					
	Rheophilous						X							
	Rheobiontic													
	Unknown or other													
GENERAL HABITAT	Benthic													± EURYECIOUS
	Lentic: Lakes & Ponds			X					X		X	X		
	Lentic: Bogs or Swamps					X			X	X				
	Lotic: Crenophilous (general)													
	Lotic: Crenophilous (thermal)											X		
	Lotic: Rivers & Streams					X			X	X				
	Aerophilous or Terrestrial													
	Estuarine													
	Littoral (Litoral)													
	Neritic													
	Oceanic													
	Eurytopic or Euryecious													
	Unknown or other													
SPECIFIC HABITAT	Planktonic (Pelagic)													EPILITHIC
	Euplanktonic						X		X	X				
	Tychoplanktonic										X			
	Periphytic (Aufwuchs)			X		X								
	Epipelic													
	Epilithic	X	X						X	X				
	Epiphytic													
	Other Periphytic	X												
	Unknown or other													
SEASONS	Winter													
	Spring													
	Summer													
	Fall													
TEMPERATURE	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Unknown or other													

APHANOTHECE CASTAGNEI

		Gei 1932	Il-P 1938	Con 1942	B&M 1954	C&K 1954	Des 1959	Pre 1962	Mat 1966	Gol 1967	H&S 1969	Mat 1970	Cap 1972	N&S 1973	Dor 1974	Van					CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				Although of little value as indicator this may be SAPROPHILIC?
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic														e						
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous					e															
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				MESOHALOBOUS
	Indifferent																				
	Halophobous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous	e	e																		
	Indifferent																				
	Rheophilous																				LIMNOPHILOUS
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic														X						
	Lentic: Lakes & Ponds						X	X	X	X				X							
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)														X						
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial				e						X										PROBABLY EURYECIOUS
	Estuarine																				
	Littoral (Litoral)									X											
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious			X																	
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)											X									
	Euplanktonic																				
	Tychoplanktonic		X					X													
	Periphytic (Aufwuchs)																				
	Epipelic																				± PERIPHYTIC
	Epilithic	X										X									
	Epiphytic						X														
	Other Periphytic											x									
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer					X															SUMMER
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Huber-Pestalozzi 1938 - "auf H_2S haltigem Schlamm"

APHANOTHECE CLATHRATA

Proschkina-Lavrenko et Makrova 1968 - .12-1.5 o/oo salt; 24-28°C

		Sma 1920	Ger 1952	Il-P 1938	Jäk 1952	Cok 1954	Rak 1959	Tam 1959	Des 1959	Mar 1961	Jun 1962	Fre 1962	Tam 1964a	Gol 1967	PGM 1968	Lev 1970	Sch 1971a	Tkt 1971	Lez 1974	Im 1974	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																		x			
	Mesotrophic																					
	Oligotrophic																x			x		OLIGOTROPHIC
	Dystrophic																					
	Unknown or other				?																	
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous					?																
	alpha range (strong)																					
	beta range (weak)					x																
	Oligohalobous																					
	Halophilous																					± EURYHALOBOUS
	Indifferent																					
	Halophobous					?																
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	x	x								x	x						x				
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																				x	
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)													x								
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		x	x		x	x	x	x	x		x		x	x			x	x			
	Euplanktonic	x									x											
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					EUPLANKTONIC
	Epilithic													x								
	Epiphytic											x										
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring					x																
	Summer					x										x						SUMMER
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

APHANOTHECE NOSTOCOPSIS

		Skuj 1932	H-P 1938	C&K 1954	CONSENSUS
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
	Unknown or other				
SAPROBIAN	Polysaprobic or Saprobiontic				
	Mesosaprobic				
	alpha range (strong)				
	beta range (weak)				PROBABLY SAPROPHILIC
	Oligosaprobic				
	Saprophilic			?	
	Saproxenous				
	Katharobic or Saprophobic				
	Unknown or other				
NUTRIENT	Polytrophic				
	Eutrophic				
	Mesotrophic				DYSTROPHIC
	Oligotrophic				
	Dystrophic	?	X		
	Unknown or other				
HALOBION	Euhalobous or Polyhalobous				
	Mesohalobous			X	
	alpha range (strong)				
	beta range (weak)				
	Oligohalobous			?	EURYHALOBOUS
	Halophilous				
	Indifferent				
	Halophobous				
	Euryhalobous or Eurynaline			X	
	Unknown or other				
CURRENT	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
	Unknown or other				
GENERAL HABITAT	Benthic				
	Lentic: Lakes & Ponds				
	Lentic: Bogs or Swamps				
	Lotic: Crenophilous (general)				
	Lotic: Crenophilous (thermal)				
	Lotic: Rivers & Streams				
	Aerophilous or Terrestrial				
	Estuarine				
	Littoral (Litoral)				
	Neritic				
	Oceanic				
	Eurytopic or Euryecious				
	Unknown or other				
SPECIFIC HABITAT	Planktonic (Pelagic)		X		
	Euplanktonic				
	Tychoplanktonic				
	Periphytic (Aufwuchs)				
	Epipelic				PLANKTONIC
	Epilithic				
	Epiphytic				
	Other Periphytic				
	Unknown or other				
SEASONS	Winter				
	Spring				
	Summer				
	Fall				
TEMPERATURE	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Unknown or other				

APHANOTHECE PULVERULENTA

		Gei 1932	H-P 1938	L&O 1965	L&P 1970	CONSENSUS
pH	Acidobiontic					
	Acidophilous					
	Indifferent					
	Alkaliphilous					
	Alkalibiontic					
	Unknown or other					
SAPROBIAN	Polysaprobic or Saprobiontic					
	Mesosaprobic					
	alpha range (strong)					
	beta range (weak)					
	Oligosaprobic					
	Saprophilic					
	Saproxenous					
	Katharobic or Saprophobic					
	Unknown or other					
NUTRIENT	Polytrophic					
	Eutrophic					
	Mesotrophic					DYSTROPHIC
	Oligotrophic					
	Dystrophic			≠		
	Unknown or other					
HALOBION	Euhalobous or Polyhalobous					
	Mesohalobous					
	alpha range (strong)					
	beta range (weak)					
	Oligohalobous					
	Halophilous					
	Indifferent					
	Halophobous					
	Euryhalobous or Euryhaline					
	Unknown or other					
CURRENT	Limnobiontic					
	Limnophilous		≠			
	Indifferent					LIMNOPHILOUS
	Rheophilous					
	Rheobiontic					
	Unknown or other					
GENERAL HABITAT	Benthic					
	Lentic: Lakes & Ponds	X				
	Lentic: Bogs or Swamps	X				
	Lotic: Crenophilous (general)					
	Lotic: Crenophilous (thermal)					
	Lotic: Rivers & Streams					
	Aerophilous or Terrestrial					LENTIC
	Estuarine					
	Littoral (Litoral)					
	Neritic					
	Oceanic					
	Eurytopic or Euryecious					
	Unknown or other					
SPECIFIC HABITAT	Planktonic (Pelagic)		X		X	
	Euplanktonic					
	Tychoplanktonic					
	Periphytic (Aufwuchs)					
	Epipelic					PLANKTONIC
	Epilithic					
	Epiphytic					
	Other Periphytic					
	Unknown or other					
SEASONS	Winter					
	Spring					
	Summer					
	Fall					
TEMPERATURE	Euthermal					
	Mesothermal			X		
	Oligothermal			X		
	Stenothermal					EURYTHERMAL
	Metathermal					
	Eurythermal			X		
	Unknown or other					

Louis et Olbrechts 1965 - 0-23°C; pH 4.6-5.2

APHANOTHECE STAGNINA

		Sml 1920	Pro 1928	Sch 1928	Gel 1932	Bud 1942	Que 1955	Rou 1957	Des 1959	Pal 1959	R&B 1959	Pre 1962	Fje 1964	Rou 1964	Fje 1965a	Mat 1970	MgP 1972	WGS 1975	Tez 1974	Dor 1974	Moo 1974b	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic							X														SAPROXENOUS
	Saprophilic																					
	Saproxenous												X		X							
	Katharobic or Saprophobic									B												
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic										X								#			EUTROPHIC
	Mesotrophic																					
	Oligotrophic						J															
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																X					EURYHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																D					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				#																	
	Indifferent								#													INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic											X	X		X					X		BENTHIC, LAKES & PONDS + EURYECIOUS
	Lentic: Lakes & Ponds	X							X			X			X							
	Lentic: Bogs or Swamps					X																
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams								X												X	
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)		X																			
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		X						X		X								X			PLANKTONIC, EPILITHIC
	Euplanktonic											X										
	Tychoplanktonic	X																				
	Periphytic (Aufwuchs)																					
	Epipelic													X								
	Epilithic															X		X			X	
	Epiphytic			X												X						
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					FALL
	Spring																					
	Summer																					
	Fall																	X				
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Round 1957 - associated with higher nutrient status
Proschkina-Lavrenko et Makarova 1968 - .12-1.5 o/oo salt; 24-28°C

CALOTHRIX BRAUNII

		TIT 1910	Cet 1932	Cet 1942	Nes 1954	Nes 1959	Tam 1959	Pal 1959	Sin 1961	Mst 1970	WAS 1973	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)											
	Oligosaprobic											
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											PROBABLY ± EUTROPHIC
	Oligotrophic											
	Dystrophic											
	Unknown or other							X				
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Euryhaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous		x	x								
	Indifferent											LIMNOPHILOUS
	Rheophilous											
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic											
	Lentic: Lakes & Ponds				X							
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)											
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams	X										LAKES & PONDS, RIVERS & STREAMS
	Aerophilous or Terrestrial											
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)				X							
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)		x							X		
	Epipelic											EPILITHIC, EPIPHYTIC
	Epilithic	X	x					X		X		
	Epiphytic		x				X			X		
	Other Periphytic	X										
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer											SUMMER
	Fall											
TEMPERATURE	Eutherma1											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

CALOTHRIX CONFERVICOLA

		Pik 1886	Til 1910	New 1931	Gel 1932	Fre 1934	Gel 1942	Crk 1954	Pal 1959	Coc 1967	CONSENSUS
pH	Acidobiontic										
	Acidophilous										
	Indifferent										
	Alkaliphilous										
	Alkalibiontic										
	Unknown or other										
SAPROBIAN	Polysaprobic or Saprobiontic										
	Mesosaprobic										
	alpha range (strong)										
	beta range (weak)										
	Oligosaprobic										PROBABLY SAPROPHILIC
	Saprophilic										
	Saproxenous										
	Katharobic or Saprophobic										
	Unknown or other								L		
NUTRIENT	Polytrophic										
	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
	Unknown or other										
HALOBION	Euhalobous or Polyhalobous										
	Mesohalobous			X				X			
	alpha range (strong)										
	beta range (weak)										
	Oligohalobous										MESOHALOBOUS
	Halophilous										
	Indifferent										
	Halophobous										
	Euryhalobous or Euryhaline										
	Unknown or other										
CURRENT	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
	Unknown or other										
GENERAL HABITAT	Benthic										
	Lentic: Lakes & Ponds		X								
	Lentic: Bogs or Swamps		X								
	Lotic: Crenophilous (general)										
	Lotic: Crenophilous (thermal)										
	Lotic: Rivers & Streams										
	Aerophilous or Terrestrial										LENTIC, LITTORAL
	Estuarine										
	Littoral (Litoral)	X	X	X						X	
	Neritic										
	Oceanic										
	Eurytopic or Euryecious										
	Unknown or other										
SPECIFIC HABITAT	Planktonic (Pelagic)										
	Euplanktonic										
	Tychoplanktonic										
	Periphytic (Aufwuchs)						X				
	Epipelic										EPIPHYTIC
	Epilithic						X				
	Epiphytic	X	X			X				X	
	Other Periphytic										
	Unknown or other										
SEASONS	Winter										
	Spring										
	Summer	X	X								SUMMER
	Fall										
TEMPERATURE	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Unknown or other										

CALOTHRIX FUSCA

		Til 1910	Gel 1932	Gel 1942	Con 1942	Mee 1954	Des 1959	Tam 1959	Sin 1961	Fie 1964	Rou 1965	Bou 1966	Gol 1967	Bac 1968	Mat 1970	T&T 1971	W&S 1973	Dor 1974			CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				SAPROPHOBIC
	Saprophilic													X							
	Saproxenous																				
	Katharobic or Saprophobic									X				X							
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent			=		=						=									INDIFFERENT
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic									X											
	Lentic: Lakes & Ponds	X				X						X				X		X			
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																	X			
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams																				LAKES & PONDS, ± EURYECIOUS
	Aerophilous or Terrestrial																				
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious				J																
	Unknown or other						M														
SPECIFIC HABITAT	Planktonic (Pelagic)	X				X															
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)		=										X								EPILITHIC, EPIPHYTIC
	Epipelic																				
	Epilithic	X						X		X				X							
	Epiphytic	X		X			X														
	Other Periphytic					X															
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				FALL
	Fall															X					
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

CALOTHRIX PARIETINA

		KEM 1908	Tal 1910	Low 1923	B-P 1923	Ger 1932	B-P 1935	Kol 1935	WeB 1952	Des 1959	Fot 1959	Sin 1961	Lie 1962	Pie 1962	Rou 1964	Fje 1964	Rou 1965	Bro 1965	HeS 1969	Mat 1970	WeS 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic	X						X					X									OLIGOSAPROBIC; SAPROPHOBIC !
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic															X						
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				=								=									
	Indifferent																=					
	Rheophilous												=									INDIFFERENT
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic										X				X							
	Lentic: Lakes & Ponds		X											X			X					
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)			X																		
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial		X		=	X		I			I	=						X				± TERRESTRIAL
	Estuarine																					
	Littoral (Litoral)																		O			
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious			I																		
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic												X									
	Periphytic (Aufwuchs)																				X	
	Epipelic		X																			
	Epilithic		X	X	X				X			X	X	X		X						EPILITHIC
	Epiphytic		X						X										X			
	Other Periphytic												X									
	Unknown or other																					
SEASONS	Winter		X	X																		
	Spring		X	X																		
	Summer		X																		X	ALL TIMES OF YEAR
	Fall		X																			
TEMPERATURE	Eutherma1																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

CHAMAESIPHON CONFERVICOLA

		Wol 1887	Sta 1929	Gei 1932	Gei 1935	Gei 1942	Pre 1962	Tam 1964	Gol 1967	Kan 1972	Dor 1974	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)											
	Oligosaprobic											SAPROPHILIC
	Saprophilic							X				
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystropnic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Eurynaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous											
	Indifferent		=	=	=	=						INDIFFERENT
	Rheophilous											
	Rheobiontic			=								
	Unknown or other											
GENERAL HABITAT	Benthic											
	Lentic: Lakes & Ponds	X								X		
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)								X	X		
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams								X			
	Aerophilous or Terrestrial											LAKES & PONDS CRENOPHILOUS
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)		X									
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)											
	Epipelic											EPIPHYTIC
	Epilithic								X			
	Epiphytic	X				X	X					
	Other Periphytic											
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer											
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

CHAMAESIPHON FUSCUS

		Gei 1932	Kol 1935	Con 1942	Kol 1950	Lut 1954	Fot 1959	Hor 1959	Fie 1964	Bac 1967	Bac 1968	Kan 1972	Fri 1973	CONSENSUS
pH	Acidobiontic													
	Acidophilous													
	Indifferent													
	Alkaliphilous													
	Alkalibiontic													
	Unknown or other													
SAPROBIAN	Polysaprobic or Saprobiontic													
	Mesosaprobic													
	alpha range (strong)													
	beta range (weak)													SAPROPHOBIC OR KATHAROBIC
	Oligosaprobic					X					X			
	Saprophilic													
	Saproxenous													
	Katharobic or Saprophobic	X	X	X	X		X		X		X			
	Unknown or other													
NUTRIENT	Polytrophic													
	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
	Unknown or other													
HALOBION	Euhalobous or Polyhalobous													
	Mesohalobous													
	alpha range (strong)													
	beta range (weak)													
	Oligohalobous													
	Halophilous													
	Indifferent													
	Halophobous													
	Euryhalobous or Euryhaline													
	Unknown or other													
CURRENT	Limnobiontic													
	Limnophilous													
	Indifferent													RHEOPHILOUS, PERHAPS RHEOBIONTIC
	Rheophilous	#								P				
	Rheobiontic				X									
	Unknown or other													
GENERAL HABITAT	Benthic									X				
	Lentic: Lakes & Ponds													
	Lentic: Bogs or Swamps													
	Lotic: Crenophilous (general)													
	Lotic: Crenophilous (thermal)													
	Lotic: Rivers & Streams											X		
	Aerophilous or Terrestrial													EURYECIOUS
	Estuarine													
	Littoral (Litoral)													
	Neritic													
	Oceanic													
	Eurytopic or Euryecious				X									
	Unknown or other													
SPECIFIC HABITAT	Planktonic (Pelagic)													
	Euplanktonic													
	Tychoplanktonic													
	Periphytic (Aufwuchs)										X	X	X	
	Epipelic													EPILITHIC
	Epilithic	X							X			X		
	Epiphytic													
	Other Periphytic													
	Unknown or other													
SEASONS	Winter													
	Spring													SUMMER
	Summer											X		
	Fall													
TEMPERATURE	Euthermal													
	Mesothermal													
	Oligothermal				X					X				OLIGOTHERMAL, STENOTHERMAL
	Stenothermal				X					X				
	Metathermal													
	Eurythermal													
	Unknown or other													

Backhaus 1968 - moderately strong periodicity

CHAMAESIPHON INCRUSTANS

			Wol 1887	Tit 1910	B-P 1928	Sch 1928	Gel 1932	Gel 1942	Fot 1959	Tor 1959	Blu 1959	ZsM 1961	Tre 1962	Bac 1967	Gol 1967	Paz 1968	Mat 1968	Bas 1968	Mal 1970	Kan 1972	Fri 1973	WGS 1973	CONSENSUS
pH	Acidobiontic																						
	Acidophilous																					In	
	Indifferent																						
	Alkaliphilous																						± ACIDOPHILOUS
	Alkalibiontic																						
	Unknown or other																						
SAPROBIAN	Polysaprobic or Saprobiontic																						
	Mesosaprobic																						
	alpha range (strong)																						
	beta range (weak)																X		X				
	Oligosaprobic								X			X											β MESOSAPROBIC
	Saprophilic																						
	Saproxenous																						
	Katharobic or Saprophobic																						
	Unknown or other																						
NUTRIENT	Polytrophic																						
	Eutrophic										X												
	Mesotrophic																						
	Oligotrophic																						EUTROPHIC
	Dystrophic																						
	Unknown or other																						
HALOBION	Euhalobous or Polyhalobous																						
	Mesohalobous																						
	alpha range (strong)																						
	beta range (weak)																						
	Oligohalobous																						
	Halophilous																						
	Indifferent																						
	Halophobous																						
	Euryhalobous or Eurynaline																						
	Unknown or other																						
CURRENT	Limnobiontic																						
	Limnophilous																						
	Indifferent				#		#						X				X		#				
	Rheophilous						#			X													INDIFFERENT
	Rheobiontic																						
	Unknown or other																						
GENERAL HABITAT	Benthic																						
	Lentic	Lakes & Ponds	X																			X	
		Bogs or Swamps																					
	Lotic	Crenophilous (general)							X														
		Crenophilous (thermal)																					
		Rivers & Streams					X								X						X		
	Aerophilous or Terrestrial																						± LOTIC
	Estuarine																						
	Littoral (Litoral)																						
	Neritic																						
	Oceanic																						
	Eurytopic or Euryecious																						
	Unknown or other																D						
SPECIFIC HABITAT	Planktonic (Pelagic)																						
	Euplanktonic																						
	Tychoplanktonic																						
	Periphytic (Aufwuchs)												X				X		X	X			
	Epipelic																						EPIPHYTIC
	Epilithic						X																
	Epiphytic		X	X	X		X			X		X		X		X					X	X	
	Other Periphytic																					X	
	Unknown or other																						
SEASONS	Winter																						
	Spring																						
	Summer																X		X			X	SUMMER
	Fall																X	X	X	X			
TEMPERATURE	Euthermal																						
	Mesothermal																						
	Oligothermal																						
	Stenothermal																						
	Metathermal																						
	Eurythermal																						
	Unknown or other																						

Backhaus 1968 - moderately strong periodicity (Summer maximum)

CHAMAESIPHON POLONICUS

		Tet 1932	Con 1942	Kan 1943	Pro 1943	Fje 1964	Kan 1963	Fje 1965b	Kan 1966	Gol 1967	Mat 1970	Fje 1971	Kan 1972	Fri 1973	CONSENSUS
pH	Acidobiontic														
	Acidophilous														
	Indifferent														
	Alkaliphilous														
	Alkalibiontic														
	Unknown or other														
SAPROBIAN	Polysaprobic or Saprobiontic														
	Mesosaprobic														
	alpha range (strong)														
	beta range (weak)														
	Oligosaprobic														SAPROPHOBIC
	Saprophilic														
	Saproxenous														
	Katharobic or Saprophobic			X		X		X				X			
	Unknown or other														
NUTRIENT	Polytrophic														
	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
	Unknown or other														
HALOBION	Euhalobous or Polyhalobous														
	Mesohalobous														
	alpha range (strong)														
	beta range (weak)														
	Oligohalobous														
	Halophilous														
	Indifferent														
	Halophobous														
	Euryhalobous or Euryhaline														
	Unknown or other														
CURRENT	Limnobiontic														
	Limnophilous														
	Indifferent														
	Rheophilous	=	O												RHEOPHILOUS
	Rheobiontic														
	Unknown or other														
GENERAL HABITAT	Benthic				X		X								
	Lentic: Lakes & Ponds											X			
	Lentic: Bogs or Swamps														
	Lotic: Crenophilous (general)														
	Lotic: Crenophilous (thermal)														
	Lotic: Rivers & Streams			X				X				X			RIVERS & STREAMS
	Aerophilous or Terrestrial														
	Estuarine														
	Littoral (Litoral)									X		O			
	Neritic														
	Oceanic														
	Eurytopic or Euryecious														
	Unknown or other														
SPECIFIC HABITAT	Planktonic (Pelagic)														
	Euplanktonic														
	Tychoplanktonic														
	Periphytic (Aufwuchs)											X			
	Epipelic														
	Epilithic	X		X				X	X	X		X			EPILITHIC
	Epiphytic														
	Other Periphytic			X											
	Unknown or other														
SEASONS	Winter														
	Spring														
	Summer														
	Fall														
TEMPERATURE	Euthermal														
	Mesothermal														
	Oligothermal	X													
	Stenothermal	X													OLIGOTHERMAL, STENOTHERMAL
	Metathermal														
	Eurythermal				X										
	Unknown or other														

CHAMAESIPHON POLYMORPHUS

		Gei 1932	Con 1942	Hor 1959	Rou 1965	Bac 1967	Bac 1968	Mat 1970	Kan 1972	CONSENSUS
pH	Acidobiontic									
	Acidophilous									
	Indifferent									
	Alkaliphilous									
	Alkalibiontic									
	Unknown or other									
SAPROBIAN	Polysaprobic or Saprobiontic									
	Mesosaprobic									
	alpha range (strong)									
	beta range (weak)						X			
	Oligosaprobic			X						± EURYSAPROBIC
	Saprophilic						X	X		
	Saproxenous						X			
	Katharobic or Saprophobic			X						
	Unknown or other									
NUTRIENT	Polytrophic									
	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
	Unknown or other									
HALOBION	Euhalobous or Polyhalobous									
	Mesohalobous									
	alpha range (strong)									
	beta range (weak)									
	Oligohalobous									
	Halophilous									
	Indifferent									
	Halophobous									
	Euryhalobous or Euryhaline									
	Unknown or other									
CURRENT	Limnobiontic									
	Limnophilous									
	Indifferent				X			#		INDIFFERENT
	Rheophilous		X							
	Rheobiontic									
	Unknown or other									
GENERAL HABITAT	Benthic									
	Lentic: Lakes & Ponds									
	Lentic: Bogs or Swamps									
	Lotic: Crenophilous (general)									
	Lotic: Crenophilous (thermal)							#		
	Lotic: Rivers & Streams	X	X							LOTIC
	Aerophilous or Terrestrial	X								
	Estuarine									
	Littoral (Litoral)							X		
	Neritic									
	Oceanic									
	Eurytopic or Euryecious									
	Unknown or other									
SPECIFIC HABITAT	Planktonic (Pelagic)									
	Euplanktonic									
	Tychoplanktonic									
	Periphytic (Aufwuchs)				X		X			
	Epipelic									EPILITHIC
	Epilithic	X		X				X	X	
	Epiphytic									
	Other Periphytic									
	Unknown or other									
SEASONS	Winter									
	Spring									
	Summer									
	Fall									
TEMPERATURE	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Unknown or other									

Backhaus 1968 - weak seasonal periodicity

CHAMAESIPHON REGULARIS

Whitford and Schumacher 1973 - cool seasons, in mountainous areas

		Gel 1925	N&F 1927	Fri 1929	Gel 1932	But 1946	Hin 1959	W&S 1973	CONSENSUS
pH	Acidobiontic								
	Acidophilous								
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic								
	Unknown or other								
NUTRIENT	Polytrophic								
	Eutrophic					X			
	Mesotrophic								EUTROPHIC
	Oligotrophic								
	Dystrophic								
	Unknown or other								
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligohalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Euryhalobous or Euryhaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous	#			#		X		RHEOPHILOUS
	Rheobiontic								
	Unknown or other								
GENERAL HABITAT	Benthic								
	Lentic: Lakes & Ponds								
	Lentic: Bogs or Swamps								
	Lotic: Crenophilous (general)								
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams	X				X		X	
	Aerophilous or Terrestrial								RIVERS & STREAMS
	Estuarine								
	Littoral (Litoral)								
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other								
SPECIFIC HABITAT	Planktonic (Pelagic)								
	Euplanktonic								
	Tychoplanktonic								
	Periphytic (Aufwuchs)								
	Epipelic								
	Epilithic	X	X						EPILITHIC
	Epiphytic								
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								
	Spring								
	Summer								
	Fall								
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

CHAMAESIPHON SUBGLOBOSUS

		Gel 1932	Bac 1968	Kan 1972	CONSENSUS
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
	Unknown or other				
SAPROBIAN	Polysaprobic or Saprobiontic				
	Mesosaprobic				
	alpha range (strong)				
	beta range (weak)		X	X	
	Oligosaprobic		R		OLIGOSAPROBIC
	Saprophilic				
	Saproxenous				
	Katharobic or Saprophobic				
	Unknown or other				
NUTRIENT	Polytrophic				
	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
	Unknown or other				
HALOBION	Euhalobous or Polyhalobous				
	Mesohalobous				
	alpha range (strong)				
	beta range (weak)				
	Oligohalobous				
	Halophilous				
	Indifferent				
	Halophobous				
	Euryhalobous or Euryhaline				
	Unknown or other				
CURRENT	Limnobiontic				
	Limnophilous				
	Indifferent	=			INDIFFERENT
	Rheophilous				
	Rheobiontic				
	Unknown or other				
GENERAL HABITAT	Benthic				
	Lentic: Lakes & Ponds				
	Lentic: Bogs or Swamps				
	Lotic: Crenophilous (general)				
	Lotic: Crenophilous (thermal)				
	Lotic: Rivers & Streams				
	Aerophilous or Terrestrial				
	Estuarine				
	Littoral (Litoral)				
	Neritic				
	Oceanic				
	Eurytopic or Euryecious				
	Unknown or other				
SPECIFIC HABITAT	Planktonic (Pelagic)				
	Euplanktonic				
	Tychoplanktonic				
	Periphytic (Aufwuchs)		X	X	
	Epipelic				EPILITHIC
	Epilithic			X	
	Epiphytic				
	Other Periphytic				
	Unknown or other				
SEASONS	Winter				
	Spring				
	Summer				
	Fall				
TEMPERATURE	Eutherma1				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Unknown or other				

CHLOROGLOEA MICROCYSTOIDES

		Gel 1932	Des 1959	Cia 1962a	Tam 1964	Rou 1965	Gol 1967	Mat 1970	CONSENSUS
pH	Acidobiontic								
	Acidophilous								
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)				X				β MESOSAPROBIC
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic								
	Unknown or other								
NUTRIENT	Polytrophic								
	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
	Unknown or other								
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligohalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Euryhalobous or Euryhaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous								
	Indifferent								PROBABLY RHEOPHILOUS
	Rheophilous								
	Rheobiontic								
	Unknown or other	S							
GENERAL HABITAT	Benthic								
	Lentic: Lakes & Ponds								
	Lentic: Bogs or Swamps								
	Lotic: Crenophilous (general)								
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams		X						
	Aerophilous or Terrestrial	≈							± EURYECIOUS
	Estuarine								
	Littoral (Litoral)				X				
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other			∞					
SPECIFIC HABITAT	Planktonic (Pelagic)								
	Euplanktonic								
	Tychoplanktonic								
	Periphytic (Aufwuchs)								
	Epipelic								
	Epilithic	X	X			X	X	X	EPILITHIC
	Epiphytic		X		X		X		
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								
	Spring								
	Summer								
	Fall								
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

CHROOCOCCUS DISPERSUS

		Smi 1920	Lie 1926	Pro 1928	Gel 1932	H-P 1938	Jar 1952	Mce 1954	Fot 1959	Tam 1959	Fre 1962	Val 1971	Sch 1971a	Sae 1971	T&T 1971	Omp 1972	W&S 1973	Tho 1974				CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic						X		X													
	Mesotrophic																					
	Oligotrophic											=	=									EUTROPHIC
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				=	=																
	Indifferent																					
	Rheophilous																					LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X													X	X	X					
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)													X								
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X	X	X		X		X		X				X	X					
	Euplanktonic	X									X											
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					EUPLANKTONIC
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer											X										SUMMER, FALL
	Fall															X						
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Liebetanz 1926 - maximum limit of tolerance .25 o/oo salt

CHROOCOCCUS LIMNETICUS

		Smi 1920	Low 1923	Pro 1928	H-P 1938	Tra 1939	Jar 1952	C&K 1954	Due 1955	Des 1959	Mar 1961	Pre 1962	Lun 1962	Tam 1964	Tam 1967	B&K 1968	Tam 1969	Val 1971	Sae 1971	P&M 1973	K&S 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous											h										
	Indifferent																					ACIDOPHILOUS (±)
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																			X	X	PROBABLY ±
	Oligosaprobic																			X	X	EURYSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic						1															
	Mesotrophic																					EURYTROPHIC
	Oligotrophic							1														
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)							X														
	beta range (weak)																					
	Oligohalobous							X														EURYHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline					X		X?														
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					RHEOPHILOUS (±)
	Rheophilous													X								
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds				X							X	X						X	X		
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial									X												LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)			X																		
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X	X						X		X	X		X		X		X		
	Euplanktonic	X										X										
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					EUPLANKTONIC
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring														X	X	X					SPRING
	Summer														X		X	X				
	Fall															X		X				
TEMPERATURE	Eutherma1																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

CHROOCOCCUS MINUTUS

Czermin-Chudenitz 1955 - maximum development 13.2-17.8°C; extreme range 2.2-22.6°C

		Sml 1920	Fro 1928	Kic 1930	Gel 1932	L-P 1938	Gel 1942	Pet 1946	Tar 1952	Cek 1954	C-C 1955	Wes 1959	Tam 1959	Cla 1962a	Cla 1962b	Fre 1962	Tam 1965	Kap 1972	Hor 1973	Wis 1973	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																		X			
	Oligosaprobic																					MESOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					EURYTROPHIC
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)									X												
	Oligohalobous																					EURYHALOBOUS
	Halophilous																					
	Indifferent			X																		
	Halophobous									X												
	Euryhalobous or Euryhaline			X						X												
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				#	#						#		#								
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																				X	
	Lentic: Lakes & Ponds											X				X				X		
	Lentic: Bogs or Swamps				X	X									X	X						
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)						X	X						X							X	
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial											X										EURYECIOUS
	Estuarine																					
	Littoral (Litoral)		X																	X		
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other														X							
SPECIFIC HABITAT	Planktonic (Pelagic)				X								X	X	X			X				
	Euplanktonic																					
	Tychoplanktonic	X										X				X						
	Periphytic (Aufwuchs)																					
	Epipelic																					TYCHOPLANKTONIC
	Epilithic																					
	Epiphytic											X	X									
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer									X	X											SUMMER
	Fall									X												
TEMPERATURE	Eutherma1																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

CHROOCOCCUS PLANCTONICUS

Huber-Pestalozzi 1938 - found in association with H_2S development

		Bet 1935	H-P 1938	Bet 1955	C&K 1954	Rou 1965	CONSENSUS
pH	Acidobiontic						
	Acidophilous						
	Indifferent						
	Alkaliphilous						
	Alkalibiontic						
	Unknown or other						
SAPROBIAN	Polysaprobic or Saprobiontic						
	Mesosaprobic						
	alpha range (strong)						
	beta range (weak)						
	Oligosaprobic						
	Saprophilic						
	Saproxenous						
	Katharobic or Saprophobic						
	Unknown or other						
NUTRIENT	Polytrophic						
	Eutrophic	X	X				EUTROPHIC
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
	Unknown or other						
HALOBION	Euhalobous or Polyhalobous						
	Mesohalobous						
	alpha range (strong)						
	beta range (weak)			X			
	Oligohalobous			X			EURYHALOBOUS
	Halophilous						
	Indifferent						
	Halophobous			?			
	Euryhalobous or Euryhaline						
	Unknown or other						
CURRENT	Limnobiontic						
	Limnophilous						
	Indifferent						
	Rheophilous						
	Rheobiontic						
	Unknown or other						
GENERAL HABITAT	Benthic						
	Lentic: Lakes & Ponds		X	X			LAKES & PONDS
	Lentic: Bogs or Swamps						
	Lotic: Crenophilous (general)						
	Lotic: Crenophilous (thermal)						
	Lotic: Rivers & Streams						
	Aerophilous or Terrestrial						
	Estuarine						
	Littoral (Litoral)						
	Neritic						
	Oceanic						
	Eurytopic or Euryecious						
	Unknown or other						
SPECIFIC HABITAT	Planktonic (Pelagic)	X					PLANKTONIC
	Euplanktonic						
	Tychoplanktonic						
	Periphytic (Aufwuchs)						
	Epipelic						
	Epilithic						
	Epiphytic						
	Other Periphytic						
	Unknown or other						
SEASONS	Winter		X	X	X		WINTER
	Spring						
	Summer						
	Fall						
TEMPERATURE	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
	Unknown or other						

CHROOCOCCUS TURGIDUS (First of 2 profile sheets)

		Smi 1920	R-F 1923	Ros 1928	Cor 1932	H-F 1938	Hol 1939	Ell 1940	Ewi 1942	Cou 1947	Ins 1948	Ass 1945	Nob 1946	Ric 1949	Ter 1952	Cra 1954	M-M 1955	Des 1959	Ron 1959	Mar 1961	ZSM 1961	CONSENSUS
PH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous						m															
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																X					
	Mesosaprobic																					
	alpha range (strong)																X					
	beta range (weak)																			X	X	
	Oligosaprobic																			X	X	
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other				C									C								
NUTRIENT	Polytrophic																					
	Eutrophic						X															
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other														X							
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous															X						
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous															C						
	Euryhalobous or Euryhaline															X						
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					CONSENSUS ON FOLLOWING PAGE
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X	X					X														
	Lentic: Bogs or Swamps		X		X	X			X													
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)										X											
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)			X																		
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious		X							C												
	Unknown or other												X					C				
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X		X											X			X		
	Euplanktonic																					
	Tychoplanktonic	X										X										
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic				X										X							
	Epiphytic																X		X			
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer						X															
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

CHROOCOCCUS TURGIDUS (Last of 2 profile sheets)

		Pre 1962	Cla 1962a	Tam 1964	Fie 1964	FdS 1965	Tam 1965	C-C 1966	Mat 1966	Tam 1967	Mat 1970	Dob 1970	Suc 1971	Pez 1971	Can 1972	Sec 1972	PM 1973	MS 1973	Tho 1974	SM 1974	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous	h																				
	Indifferent																					INDIFFERENT
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																X					
	Oligosaprobic					#											X					EURYSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic				#																	
	Unknown or other																					
NUTRIENT	Polytropnic																					
	Eutropnic																					
	Mesotropnic																					
	Oligotrophic																					
	Dystropnic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		#																			
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic				X																	
	Lentic: Lakes & Ponds	X							X				X			X		X	X		X	
	Lentic: Bogs or Swamps	X	X								X										X	
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					EURYECIOUS
	Estuarine																					
	Littoral (Litoral)			X					X				X									
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other		∞									∞										
SPECIFIC HABITAT	Planktonic (Pelagic)		X				X	X							X				X			
	Euplanktonic																			X		
	Tychoplanktonic	X																		X		
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC
	Epilithic													X								
	Epiphytic			X		X																
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring									X												SUMMER
	Summer															X						
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

CHROOCOCCUS VARIUS

		Gel 1932	Gel 1942	Des 1959	Pre 1962	Dob 1969	Dob 1970	Wek 1971	Dor 1974	Sch 1975	CONSENSUS
pH	Acidobiontic										
	Acidophilous										
	Indifferent										
	Alkaliphilous										
	Alkalibiontic										
	Unknown or other										
SAPROBIAN	Polysaprobic or Saprobiontic										
	Mesosaprobic										
	alpha range (strong)										
	beta range (weak)										
	Oligosaprobic										
	Saprophilic										
	Saproxenous										
	Katharobic or Saprophobic										
	Unknown or other										
NUTRIENT	Polytrophic										
	Eutrophic										
	Mesotrophic										OLIGOTROPHIC
	Oligotrophic							X			
	Dystrophic										
	Unknown or other										
HALOBION	Euhalobous or Polyhalobous										
	Mesohalobous										
	alpha range (strong)										
	beta range (weak)										
	Oligohalobous										
	Halophilous										
	Indifferent										
	Halophobous										
	Euryhalobous or Eurynaline										
	Unknown or other										
CURRENT	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
	Unknown or other										
GENERAL HABITAT	Benthic								X		
	Lentic: Lakes & Ponds										
	Lentic: Bogs or Swamps										
	Lotic: Crenophilous (general)								X		
	Lotic: Crenophilous (thermal)				X						
	Lotic: Rivers & Streams										EURYECIOUS
	Aerophilous or Terrestrial										
	Estuarine										
	Littoral (Litoral)										
	Neritic										
	Oceanic										
	Eurytopic or Euryecious										
	Unknown or other					X	X			X	
SPECIFIC HABITAT	Planktonic (Pelagic)										
	Euplanktonic										
	Tychoplanktonic				X						
	Periphytic (Aufwuchs)			X							EPILITHIC
	Epipelic										
	Epilithic	X	X								
	Epiphytic			X							
	Other Periphytic										
	Unknown or other										
SEASONS	Winter										
	Spring										
	Summer										
	Fall										
TEMPERATURE	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Unknown or other										

COELOSPHAERIUM KUETZINGIANUM

Singh 1960 - correlation with high temperature, high CO_2 content, and low organic content
Proschkina-Lavrenko et Makarova 1968 - .5-1.4 o/oo salt; 17-26°C

		KM 1908	Sm1 1920	Ge1 1932	H-P 1938	Nee 1948	Fat 1952	BM 1954	Tam 1959	Sin 1960	Pre 1962	Lun 1962	Pec 1967	Sin 1968	Tam 1969	Mat 1970	Sae 1971	PM 1973	WS 1973	Ke1 1973b	Tim 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic	X								m							X					OLIGOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																				m	± EURYTROPHIC
	Dystropnic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Eurynalobous or Eurynaline																					
	Unknown or other																			S		
CURRENT	Limnobiontic																					
	Limnophilous							X														
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds		X	X	X						X	X		X			X		X			LAKES & PONDS
	Lentic: Bogs or Swamps			X	X																	
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																X					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious									X												
	Unknown or other					X																
SPECIFIC HABITAT	Planktonic (Pelagic)			X	X				X	X	X		X	X		X					X	PLANKTONIC
	Euplanktonic							X														
	Tychoplanktonic		X																			
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other									m												
SEASONS	Winter																					
	Spring														X	X						SUMMER, FALL
	Summer														X	X				X		
	Fall										X				X	X						
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					EURYTHERMAL
	Stenothermal																					
	Metathermal																					
	Eurythermal									X												
	Unknown or other																					

COELOSPHAERIUM NAEGELIANUM

Bozniak and Kennedy 1968 - eurychronic; Spring, Summer, Fall

		Sml 1920	Cet 1932	H-P 1938	Cha 1940	Nyg 1945	Nee 1948	Lie 1951	Jar 1952	Rak 1956	Cot 1957	Ref 1959	Des 1959	Fot 1959	Sks 1960	Lie 1962	Fre 1962	Sch 1971	Wes 1973	Tim 1974	Bas 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)							X						X	X	X						β MESOSAPROBIC
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic								X			X										
	Mesotrophic										X											± EURYTROPHIC
	Oligotrophic																			#		
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Eurynalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		#	#				#								#						
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																				X	
	Lentic: Lakes & Ponds	X			X							X		X				X		X		
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other							∞														
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X				X			X				X	X			X	X		
	Euplanktonic	X				X																
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					PLANKTONIC
	Epipelic																					
	Epilithic																					
	Epiphytic			X																		
	Other Periphytic																					
	Unknown or other		b					b														
SEASONS	Winter																	X				
	Spring																					SUMMER
	Summer				X	X												X		X		
	Fall				X	X												X				
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

COELOSPHAERIUM PUSILLUM

		Gei 1932	H-P 1938	Tam 1959	Bou 1966	PEM 1973	Hor 1973	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic				X	X		OLIGOSAPROBIC
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous	#	#					
	Indifferent							
	Rheophilous							LIMNOPHILOUS
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic							
	Lentic: Lakes & Ponds			X				
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams							
	Aerophilous or Terrestrial							± EURYTOPIC
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious		#					
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)			X				
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)							
	Epipelic							PLANKTONIC
	Epilithic							
	Epiphytic							
	Other Periphytic							
	Unknown or other		m					
SEASONS	Winter							
	Spring							
	Summer							
	Fall							
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

CYLINDROSPERMUM MAJUS

		Til 1910	Gel 1932	H-P 1938	Bor 1940	P-L 1954	Des 1959	Fre 1962	LeO 1965	Pea 1967	MeS 1968	HeS 1969	WeS 1973	CONSENSUS
pH	Acidobiontic													
	Acidophilous							#						
	Indifferent													
	Alkalipnilous													ACIDOPHILOUS
	Alkalibiontic													
	Unknown or other													
SAPROBIAN	Polysaprobic or Saprobiontic													
	Mesosaprobic													
	alpha range (strong)													
	beta range (weak)													
	Oligosaprobic													
	Saprophilic													
	Saproxenous													
	Katharobic or Saprophobic													
	Unknown or other													
NUTRIENT	Polytrophic													
	Eutrophic													
	Mesotrophic													
	Oligotrophic													DYSTROPHIC
	Dystrophic							#						
	Unknown or other													
HALOBION	Euhalobous or Polynalobous													
	Mesohalobous													
	alpha range (strong)													
	beta range (weak)													
	Oligohalobous													
	Halophilous													
	Indifferent													
	Halophobous													
	Euryhalobous or Eurynaline													
	Unknown or other													
CURRENT	Limnobiontic													
	Limnophilous		a	a										
	Indifferent													
	Rheophilous													INDIFFERENT ?
	Rheobiontic													
	Unknown or other													
GENERAL HABITAT	Benthic													
	Lentic: Lakes & Ponds	X					X	X						
	Lentic: Bogs or Swamps													
	Lotic: Crenophilous (general)													
	Lotic: Crenophilous (thermal)													
	Lotic: Rivers & Streams	X							X					
	Aerophilous or Terrestrial		X	X	I		X	I		X		X		TERRESTRIAL
	Estuarine													
	Littoral (Litoral)	#												
	Neritic													
	Oceanic													
	Eurytopic or Euryecious													
	Unknown or other													
SPECIFIC HABITAT	Planktonic (Pelagic)					X								
	Euplanktonic													
	Tychoplanktonic													
	Periphytic (Aufwuchs)		#											
	Epipelic													PLANKTONIC
	Epilithic													
	Epiphytic													
	Other Periphytic													
	Unknown or other													
SEASONS	Winter													
	Spring													
	Summer							X				X		SUMMER
	Fall							X						
TEMPERATURE	Euthermal													
	Mesothermal													
	Oligothermal							X						MESOTHERMAL,
	Stenothermal													OLIGOTHERMAL,
	Metathermal							X						EUTHERMAL
	Eurythermal													
	Unknown or other													

Louis et Olbrechts 1965 - 12-20°C; pH 4.8-5.2

DACTYLOCOCCOPSIS ELLIPSOIDEUS

		Tei 1955	CONSENSUS
pH	Acidobiontic		
	Acidophilous		
	Indifferent		
	Alkaliphilous		
	Alkalibiontic		
	Unknown or other		
SAPROBIAN	Polysaprobic or Saprobiontic		
	Mesosaprobic		
	alpha range (strong)		
	beta range (weak)		
	Oligosaprobic		
	Saprophilic		
	Saproxenous		
	Katharobic or Saprophobic		
	Unknown or other		
NUTRIENT	Polytrophic		
	Eutrophic		
	Mesotrophic		
	Oligotrophic	X	OLIGOTROPHIC
	Dystrophic		
	Unknown or other		
HALOBION	Euhalobous or Polyhalobous		
	Mesohalobous		
	alpha range (strong)		
	beta range (weak)		
	Oligohalobous		
	Halophilous		
	Indifferent		
	Halophobous		
	Euryhalobous or Euryhaline		
	Unknown or other		
CURRENT	Limnobiontic		
	Limnophilous		
	Indifferent		
	Rheophilous		
	Rheobiontic		
	Unknown or other		
GENERAL HABITAT	Benthic		
	Lentic: Lakes & Ponds	X	
	Lentic: Bogs or Swamps		
	Lotic: Crenophilous (general)		
	Lotic: Crenophilous (thermal)	X	
	Lotic: Rivers & Streams		
	Aerophilous or Terrestrial		LAKES & PONDS
	Estuarine		
	Littoral (Litoral)		
	Neritic		
	Oceanic		
	Eurytopic or Euryecious		
	Unknown or other		
SPECIFIC HABITAT	Planktonic (Pelagic)	X	
	Euplanktonic		
	Tychoplanktonic		
	Periphytic (Aufwuchs)		
	Epipelic		PLANKTONIC
	Epilithic		
	Epiphytic		
	Other Periphytic		
	Unknown or other		
SEASONS	Winter		
	Spring		
	Summer		
	Fall		
TEMPERATURE	Eutnermal		
	Mesothermal		
	Oligothermal		
	Stenothermal		
	Metathermal		
	Eurythermal		
	Unknown or other		

DACTYLOCOCCOPSIS IRREGULARIS

Proscikina-Lavrenko et Makarova 1968 - .3-1.5 o/oo salt
Singh 1960 - favored by low organic content; correlation with high nitrate & phosphate content, and low CO_2 & O_2 content

		Fre 1930	Gel 1932	H-P 1938	C&K 1954	Sin 1960	PGM 1968	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic							
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							OLIGOTROPHIC
	Oligotrophic					=		
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)				X		=	
	Oligohalobous				?			± EURYHALOBOUS
	Halophilous						=	
	Indifferent							
	Halophobous				?			
	Euryhalobous or Eurynaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous	=	=					LIMNOPHILOUS
	Indifferent							
	Rheophilous							
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic							
	Lentic: Lakes & Ponds				X			
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams							LAKES & PONDS
	Aerophilous or Terrestrial							
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)				X		X	
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)							PLANKTONIC
	Epipelic							
	Epilithic							
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring							
	Summer							
	Fall							
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

DACTYLOCOCCOPSIS RHAPHIDIOIDES

Czernin-Chudenitz 1955 - maximum development 6-12.4°C, extreme range 4.8-12.4°C
Louis et Peeters 1967 - maximum development 0-9°C, pH 7.3-7.4
Proschkina-Lavrenko et Makarova 1968 - .3-2.5 o/oo salt

		KM 1908	Sm 1920	Gel 1932	H-P 1938	Con 1942	Jar 1952	Gak 1954	Hor 1959	Tam 1959	Gla 1962a	Tam 1965	Nat 1966	Kak 1966	Lgp 1967	Lea 1967	PKM 1968	Lgp 1970			CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				ALKALIPHILOUS (±)
	Alkaliphilous														#						
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic	X																			OLIGOSAPROBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				± DYSTROPHIC ?
	Oligotrophic																				
	Dystrophic																				
	Unknown or other				U		V														
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous							X													
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				MESOHALOBOUS
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic										X										
	Limnophilous			#	#																
	Indifferent																				LIMNOBIONTIC
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic														X						
	Lentic: Lakes & Ponds		X										X								
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams														X						
	Aerophilous or Terrestrial			X							X										EURYECIOUS
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious						d														
	Unknown or other										c										
SPECIFIC HABITAT	Planktonic (Pelagic)									X		X			X		X				
	Euplanktonic																				
	Tychoplanktonic		X		X																
	Periphytic (Aufwuchs)													X				X			TYCHOPLANKTONIC, PERIPHYTIC
	Epipelic																				
	Epilithic			X							X										
	Epiphytic			#					X												
	Other Periphytic																				
	Unknown or other													m							
SEASONS	Winter															X	X				
	Spring																				FALL
	Summer							X	X												
	Fall							X									X				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal															X					OLIGOTHERMAL, EURYTHERMAL
	Stenothermal																				
	Metathermal																				
	Eurythermal										X										
	Unknown or other																				

DACTYLOCOCCOPSIS SMITHII

Czernin-Chudenitz 1955 - maximum development 14-22.6 °C, extreme range 4.7-22.6 °C

		Gei 1932	H-P 1938	Jar 1952	C-C 1955	Tam 1959	Tre 1962	Sae 1971	Moo 1974a	CONSENSUS
pH	Acidobiontic									
	Acidophilous						#			
	Indifferent									ACIDOPHILOUS
	Alkaliphilous									
	Alkalibiontic									
	Unknown or other									
SAPROBIAN	Polysaprobic or Saprobiontic									
	Mesosaprobic									
	alpha range (strong)									
	beta range (weak)									
	Oligosaprobic									
	Sapropnilic									
	Saproxenous									
	Katharobic or Saprophobic									
	Unknown or other									
NUTRIENT	Polytropnic									
	Eutropnic									
	Mesotrophic									NUTRIENT POOR
	Oligotrophic									
	Dystropnic									
	Unknown or other			O						
HALOBION	Euhalobous or Polynalobous									
	Mesohalobous									
	alpha range (strong)									
	beta range (weak)									
	Oligohalobous									
	Halopnilous									
	Indifferent									
	Halophobous									
	Eurynalobous or Eurynaline									
	Unknown or other									
CURRENT	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
	Unknown or other									
GENERAL HABITAT	Benthic									
	Lentic: Lakes & Ponds	X	X	X			X	X	X	
	Lentic: Bogs or Swamps						X			
	Lotic: Crenophilous (general)									
	Lotic: Crenophilous (thermal)									
	Lotic: Rivers & Streams									
	Aerophilous or Terrestrial									LAKES & PONDS
	Estuarine									
	Littoral (Litoral)									
	Neritic									
	Oceanic									
	Eurytopic or Euryecious									
	Unknown or other									
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X		X					
	Euplanktonic						X			
	Tychoplanktonic									
	Periphytic (Aufwuchs)									
	Epipelic							X		EUPLANKTONIC
	Epilithic									
	Epiphytic									
	Other Periphytic									
	Unknown or other									
SEASONS	Winter									
	Spring									
	Summer			X						SUMMER
	Fall									
TEMPERATURE	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal			X						STENOTHERMAL
	Metathermal									
	Eurythermal									
	Unknown or other									

DESMONEMA WRANGELII

		Wol 1887	Til 1910	Gel 1932	Gel 1942	Fot 1959	Coe 1967	M&S 1973	CONSENSUS
pH	Acidobiontic								
	Acidophilous								
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)								SAPROPHOBIC
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic					X			
	Unknown or other								
NUTRIENT	Polytrophic								
	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
	Unknown or other								
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligohalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Euryhalobous or Euryhaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous								
	Indifferent	#		#	#		#		RHEOPHILOUS
	Rheophilous								
	Rheobiontic								
	Unknown or other								
GENERAL HABITAT	Benthic								
	Lentic: Lakes & Ponds		X						
	Lentic: Bogs or Swamps	X	X						
	Lotic: Crenophilous (general)								
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams			X				X	BOGS OR SWAMPS, RIVERS & STREAMS
	Aerophilous or Terrestrial								
	Estuarine								
	Littoral (Litoral)								
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other								
SPECIFIC HABITAT	Planktonic (Pelagic)								
	Euplanktonic								
	Tychoplanktonic								
	Periphytic (Aufwuchs)								
	Epipelic								EPILITHIC
	Epilithic			X	X	X		X	
	Epiphytic				X	X			
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								
	Spring								
	Summer								
	Fall								
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

DICHOTHRIX GYPSOPHILA

		Til 1910	New 1931	Gel 1932	Gel 1942	Oro 1943	Nce 1948	Des 1949	Fre 1962	Alm 1963	Fie 1964	Kol 1967	Kat 1970	M&S 1973	Dor 1974						CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				SAPROPHOBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic										X										
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous			X																	
	Indifferent																				
	Rheophilous																				LIMNOPHILOUS
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic										X			X							
	Lentic: Lakes & Ponds		X		X				X												
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)	X												X							
	Lotic: Rivers & Streams			X																	
	Aerophilous or Terrestrial																				EURYECIOUS
	Estuarine																				
	Littoral (Litoral)		X		X				X												
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other						X														
SPECIFIC HABITAT	Planktonic (Pelagic)																				
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				
	Epilithic	X	X	X	X	X					X	X	X								EPILITHIC
	Epiphytic																				
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Eutherma1																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

FISCHERELLA MUSCICOLA

		Gel 1932	Gel 1942	Des. 1959	Sin 1961	Mil 1961	Pre 1962	Pan 1964	Mat 1966	MGS 1968	HGS 1969	WGK 1971									CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				OLIGOTROPHIC
	Oligotrophic											*									
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous	*																			
	Indifferent																				LIMNOPHILOUS
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds							X		X											
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial	X	X		—		X		X	—											TERRESTRIAL
	Estuarine																				
	Littoral (Litoral)						X														
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)																				
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				EPILITHIC
	Epilithic				X																
	Epiphytic																				
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

GLOEOCAPSA AERUGINOSA

		Til 1910	Des 1959	Pre 1962	Fje 1964	Coc 1967	B&K 1968	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							SAPROPHOBIC
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic							
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic				≠			
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Eurynalobous or Eurynaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic				X			LAKES & PONDS
	Lentic: Lakes & Ponds		X	X				
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams							
	Aerophilous or Terrestrial							
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)		X			X		TYCHOPLANKTONIC, PERIPHYTIC
	Euplanktonic							
	Tychoplanktonic			X				
	Periphytic (Aufwuchs)							
	Epipelic		X					
	Epilithic	X			X			
	Epiphytic							
	Other Periphytic							
	Unknown or other	≠						
SEASONS	Winter							FALL
	Spring							
	Summer							
	Fall					X		
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

GLOEOTRICHIA ECHINULATA

		Smi 1920	Gel 1932	Cab 1939	Gel 1942	Nya 1945	Lie 1951	W&B 1952	Sku 1956	Fot 1959	Des 1959	Pre 1962	Lie 1962	Tun 1962	P&E 1965	Vin 1967	H&S 1969	T&T 1971	W&S 1973			CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)						X			X			X X		X							3 MESOSAPROBIC
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic				X																	
	Mesotrophic																					EUTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		*										*									
	Indifferent																					LIMNOPHILOUS
	Rheophilous		a																			
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X										X	X		X		X		X			
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams									X												
	Aerophilous or Terrestrial								1									X				LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X	X						X			X	X	X		X					
	Euplanktonic						X															
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					PLANKTONIC (EUPLANKTONIC)
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other			b							b											
SEASONS	Winter																					
	Spring																					SUMMER
	Summer									X			X			X	X		X			
	Fall									X												
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

GLOEOTRICHIA NATANS

		Gel 1932	H-P 1938	Gel 1942	Lie 1951	Mee 1954	Fot 1959	Des 1959	Lie 1962	Pre 1962	Tam 1964a	Tam 1964b	Bro 1965	Gor 1965	MGS 1969	TGT 1971	Pex 1971	Tho 1974			CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkaliobiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)				X		X		X		X										
	Oligosaprobic																				β MESOSAPROBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous	≈	≈					≈													
	Indifferent																				
	Rheophilous																				LIMNOPHILOUS
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds					X		X		X		X			X		X				
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams							X													
	Aerophilous or Terrestrial														X						LAKES & PONDS
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)	≈		≈	X				X												
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				EPIPHYTIC
	Epilithic																				
	Epiphytic	X		X				X			X	X				X					
	Other Periphytic																				
	Unknown or other				b																
SEASONS	Winter																				
	Spring																				
	Summer				X			X													SUMMER
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

GLOEOTRICHIA PISUM

		Gel 1932	H-P 1938	Gel 1942	Des 1959	Fot 1959	Pre 1962	Rou 1964	Mat 1970	L&P 1970	T&T 1971	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkalipnilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)					X						
	Oligosaprobic											3 MESOSAPROBIC
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Eurynalobous or Eurynaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous	=	=	=								
	Indifferent				=							
	Rheophilous	a	a	a								LIMNOPHILOUS
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic											
	Lentic: Lakes & Ponds						X	X		X		
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)											
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams						X					
	Aerophilous or Terrestrial											LAKES & PONDS
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X	X					X			
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)								X			
	Epipelic											PLANKTONIC, EPIPHYTIC
	Epilithic											
	Epiphytic	X	X	X			X					
	Other Periphytic											
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer							X				SUMMER
	Fall											
TEMPERATURE	Eutherma1											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

GOMPHOSPHAERIA APONINA

		Smi 1920	Fre 1930	Gei 1932	H-P 1938	Gei 1942	Dro 1943	Boc 1949	Jar 1952	C&K 1954	R&B 1959	Des 1959	Pre 1962	Bro 1965	Pet 1967a	P&M 1968	Mat 1970	See 1971	See 1972	Hor 1973	P&M 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																			X	X	β MESOSAPROBIC
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic										X	X										
	Mesotrophic										X											EURYTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other								7													
HALIBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)									X	X											
	Oligohalobous									X												EURYHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous									X												
	Euryhalobous or Euryhaline				#					#												
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous					#																
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds			X	X		X					X	X	X				X				
	Lentic: Bogs or Swamps			X																		
	Lotic: Crenophilous (general)						X															
	Lotic: Crenophilous (thermal)		X			X																
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																X					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)					X						X			X							
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)			X		X		X			X	X				X						
	Euplanktonic																					
	Tychoplanktonic	X			X								X									
	Periphytic (Aufwuchs)																					PLANKTONIC
	Epipelic																					(TYCHOPLANKTONIC)
	Epilithic						X															
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																X					SUMMER
	Summer									X									X			
	Fall																X					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Proschkina-Lavrenko et Makarova 1968 - .12-13 o/oo salt

GOMPHOSPHAERIA LACUSTRIS

Czernin-Chudenitz 1955 - maximum development 4.7-17.8°C, extreme range 2.2-22.6°C
Proschkina-Lavrenko et Makarova 1968 - .12-10 o/oo salt, 21-27°C

		KaM 1908	Smi 1920	Pro 1928	Tak 1929	Fre 1930	Red 1935	H-P 1938	Cha 1940	Csk 1954	C-C 1955	Que 1955	RaB 1959	Des 1959	Tam 1959	Pre 1962	PaM 1968	Tam 1969	Tev 1970	PaM 1973	WaS 1975	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																			X	X	
	Oligosaprobic	X																		X	X	OLIGOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic												X									
	Mesotrophic												X									
	Oligotrophic											X										± EURYTROPHIC
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)									X	X											
	Oligohalobous						X															
	Halophilous																					± EURYHALOBOUS
	Indifferent																					
	Halophobous				?					?												
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous							#														
	Indifferent																					INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds							X	X					X		X					X	
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)					X																
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)			X																		
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious														X							
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)							X							X		X		X		X	
	Euplanktonic		X													X						
	Tychoplanktonic																					
	Periphytic (Aufwuchs)														X							
	Epipelic																					PLANKTONIC (EUPLANKTONIC)
	Epilithic																					
	Epiphytic													X								
	Other Periphytic																					
	Unknown or other														m							
SEASONS	Winter																					
	Spring																X				X	
	Summer								X							X	X		X		X	SUMMER
	Fall																X					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					PROBABLY STENOTHERMAL
	Stenothermal														X							
	Metathermal																					
	Eurythermal										*											
	Unknown or other																					

HAPALOSIPHON FONTINALIS

		Til 1910	Gei 1932	Kol 1935	Con 1942	Gei 1942	Lie 1951	Pal 1959	Des 1959	Tam 1959	Pre 1962	Lie 1962	Alm 1963	Tam 1964	Mat 1966	DGW 1967	HGS 1969	WFS 1973			CONSENSUS
pH	Acidobiontic																				
	Acidophilous							=			=										
	Indifferent																				ACIDOPHILOUS
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic			X			X				X										OLIGOSAPROBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous	=	=				=		=			=									LIMNOPHILOUS
	Indifferent																				
	Rheophilous																	=			
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X						X			X										
	Lentic: Bogs or Swamps		X			X	X	X			X	X			X						BOGS & SWAMPS, ± EURYECIOUS
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)		X			X	X					X									
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial												X				—				
	Estuarine																				
	Littoral (Litoral)										X										
	Meritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other				X																
SPECIFIC HABITAT	Planktonic (Pelagic)					X															
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				EPIPHYTIC
	Epilithic	X																			
	Epiphytic	X			X				X	X				X				X			
	Other Periphytic																	X			
	Unknown or other																				
SEASONS	Winter																	X			
	Spring															X		X			ALL TIMES OF YEAR
	Summer															X		X			
	Fall															X		X			
TEMPERATURE	Eutherma1																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Takha 1963 - pH optimum 7-8

HOMOEOTHRIX CRUSTACEA

		Gei 1932	Gol 1967	Fri 1973	CONSENSUS
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
	Unknown or other				
SAPROBIAN	Polysaprobic or Saprobiontic				
	Mesosaprobic				
	alpha range (strong)				
	beta range (weak)			X	8 MESOSAPROBIC, OLIGOSAPROBIC
	Oligosaprobic			X	
	Saprophilic				
	Saproxenous				
	Katharobic or Saprophobic				
	Unknown or other				
NUTRIENT	Polytrophic				
	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
	Unknown or other				
HALOBION	Euhalobous or Polyhalobous				
	Mesohalobous				
	alpha range (strong)				
	beta range (weak)				
	Oligohalobous				
	Halophilous				
	Indifferent				
	Halophobous				
	Euryhalobous or Eurynaline				
	Unknown or other				
CURRENT	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
	Unknown or other				
GENERAL HABITAT	Benthic				
	Lentic: Lakes & Ponds				
	Lentic: Bogs or Swamps				
	Lotic: Crenophilous (general)				
	Lotic: Crenophilous (thermal)				
	Lotic: Rivers & Streams				
	Aerophilous or Terrestrial				
	Estuarine				
	Littoral (Litoral)				
	Neritic				
	Oceanic				
	Eurytopic or Euryecious				
	Unknown or other				
SPECIFIC HABITAT	Planktonic (Pelagic)				
	Euplanktonic				
	Tychoplanktonic				
	Periphytic (Aufwuchs)				
	Epipelic				EPILITHIC
	Epilithic	X	X		
	Epiphytic				
	Other Periphytic				
	Unknown or other				
SEASONS	Winter				
	Spring			X	SPRING
	Summer				
	Fall				
TEMPERATURE	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Unknown or other				

LYNGBYA CIRCUMCRETA

		Gei 1932	H-P 1938	Mee 1954	Des 1959	Tam 1959	Sin 1960	Tam 1964	Tam 1965	Tam 1967	Tam 1968	Tam 1969	CONSENSUS
pH	Acidobiontic												
	Acidophilous												
	Indifferent												
	Alkaliphilous												
	Alkalibiontic												
	Unknown or other												
SAPROBIAN	Polysaprobic or Saprobiontic												
	Mesosaprobic												
	alpha range (strong)												
	beta range (weak)												Favored by high organic content - Singh 1960
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Katharobic or Saprophobic												
	Unknown or other						NJ						
NUTRIENT	Polytrophic												
	Eutrophic												
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
	Unknown or other												
HALOBION	Euhalobous or Polyhalobous												
	Mesohalobous												
	alpha range (strong)												
	beta range (weak)												
	Oligohalobous												
	Halophilous												
	Indifferent												
	Halophobous												
	Euryhalobous or Euryhaline												
	Unknown or other												
CURRENT	Limnobiontic												
	Limnophilous												
	Indifferent												
	Rheophilous												
	Rheobiontic												
	Unknown or other												
GENERAL HABITAT	Benthic												
	Lentic: Lakes & Ponds		X	X	X								
	Lentic: Bogs or Swamps												
	Lotic: Crenophilous (general)												
	Lotic: Crenophilous (thermal)												
	Lotic: Rivers & Streams												
	Aerophilous or Terrestrial												LAKES & PONDS
	Estuarine												
	Littoral (Litoral)												
	Neritic												
	Oceanic												
	Eurytopic or Euryecious					X							
	Unknown or other												
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X	X	X	X		X	X				
	Euplanktonic												
	Tychoplanktonic												
	Periphytic (Aufwuchs)												
	Epipelic												PLANKTONIC
	Epilithic					X							
	Epiphytic					X		X					
	Other Periphytic												
	Unknown or other					m							
SEASONS	Winter												
	Spring							X	X	X			SPRING, SUMMER FALL
	Summer							X	X	X			
	Fall							X	X	X			
TEMPERATURE	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												EURYTHERMAL
	Metathermal												
	Eurythermal					X							
	Unknown or other												

Singh 1960 - favored by high organic content, high nitrate & phosphate content, and high CO_2 content

LYNGBYA CONTORTA

		Bru 1903	Sml 1920	Sml 1926	Pro 1928	Gel 1932	J-P 1938	Jar 1952	Mee 1954	Des 1959	Pre 1962	PGV 1965	PGM 1968	Hor 1973	PGM 1973	CONSENSUS
pH	Acidobiontic															
	Acidophilous															
	Indifferent															
	Alkaliphilous															
	Alkalibiontic															
	Unknown or other															
SAPROBIAN	Polysaprobic or Saprobiontic															
	Mesosaprobic															
	alpha range (strong)															
	beta range (weak)															
	Oligosaprobic													X	X	
	Saprophilic															β MESOSAPROBIC
	Saproxenous															
	Katharobic or Saprophobic															
	Unknown or other							+								
NUTRIENT	Polytrophic															
	Eutrophic															
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
	Unknown or other															
HALOBION	Euhalobous or Polyhalobous															
	Mesohalobous															
	alpha range (strong)															
	beta range (weak)															
	Oligohalobous															
	Halophilous															
	Indifferent															
	Halophobous															
	Euryhalobous or Eurynaline															
	Unknown or other															
CURRENT	Limnobiontic															
	Limnophilous															
	Indifferent															
	Rheophilous															
	Rheobiontic															
	Unknown or other															
GENERAL HABITAT	Benthic															
	Lentic: Lakes & Ponds		X			X	X		X	X	X					
	Lentic: Bogs or Swamps															
	Lotic: Crenophilous (general)															
	Lotic: Crenophilous (thermal)															
	Lotic: Rivers & Streams															
	Aerophilous or Terrestrial															
	Estuarine															LAKES & PONDS
	Littoral (Litoral)															
	Neritic															
	Oceanic															
	Eurytopic or Euryecious															
	Unknown or other															
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X	X	X	X		X		X	X				
	Euplanktonic		X							X						
	Tychoplanktonic									X						
	Periphytic (Aufwuchs)															
	Epipelic															
	Epilithic															PLANKTONIC
	Epiphytic															
	Other Peripnytic															
	Unknown or other															
SEASONS	Winter															
	Spring															
	Summer															
	Fall															
TEMPERATURE	Euthermal															
	Mesothermal															
	Oligothermal															
	Stenothermal															
	Metathermal															
	Eurythermal															
	Unknown or other															

LYNGBYA DIGUETI

		Til 1910	Gel 1932	Rao 1937	Mee 1954	Des 1959	Pal 1959	Cla 1962a	Pre 1962	Alm 1963	WGS 1973	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)											Associated with Pollution - Palmer 1959
	Oligosaprobic											
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other						C					
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Eurynaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous		#					#				
	Indifferent							•				LIMNOPHILOUS
	Rheophilous											
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic							X				
	Lentic: Lakes & Ponds			X	X	X			X			
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)											
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams											
	Aerophilous or Terrestrial								X	X		LAKES & PONDS
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other							C				
SPECIFIC HABITAT	Planktonic (Pelagic)				X							
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)											
	Epipelic											EPIPHYTIC
	Epilithic											
	Epiphytic							X	X			
	Other Periphytic	X								X		
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer											
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

LYNGBYA KUETZINGII

		Sch 1928	Gei 1932	Gei 1942	Tam 1959	Des 1959	Tam 1964	Cla 1965	Mat 1970	Fri 1973	Dor 1974	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)									X	X	
	beta range (weak)									X		
	Oligosaprobic											MESOSAPROBIC
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Euryhaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous		=	=								
	Indifferent											LIMNOPHILOUS
	Rheophilous						X					
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic											
	Lentic: Lakes & Ponds					X					X	
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)										X	
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams											
	Aerophilous or Terrestrial											LAKES & PONDS
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other							co				
SPECIFIC HABITAT	Planktonic (Pelagic)											
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)											EPIPHYTIC
	Epipelic											(diagnostic!)
	Epilithic											
	Epiphytic	X	X	X	X		X		X	X		
	Other Periphytic											
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer											
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

LYNGBYA LIMNETICA

Czernin-Chudenitz 1955 - Maximum development 14-20°C, extreme range 7.1-20.8°C
Proschkina-Lavrenko et Makarova 1968 - .4-10 o/oo salt, .7-1.7°C

		Lem 1903	Bru 1905	Sm1 1920	Gel 1932	Con 1942	Nyg 1945	Jäh 1952	Des 1959	Tam 1959	R&B 1959	Ana 1961	Cla 1962	Pre 1962	Tam 1964	Nor 1967	Tam 1969	S&P 1971	Hor 1973	Tim 1974	Lez 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)														X							
	beta range (weak)																		X			
	Oligosaprobic																					MESOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic										X										#	
	Mesotrophic																					
	Oligotrophic																			#		EURYTROPHIC
	Dystropic																					
	Unknown or other						?															
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous											X										EURYHALOBOUS
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline											X										
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous														X							RHEOPHILOUS ±
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds			X					X			X										
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)											X										
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial								X													EURYECIOUS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious					J				#												
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X		X					X	X		X	X			X					
	Euplanktonic			X			X						X									
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC (EUPLANKTONIC)
	Epilithic									X												
	Epiphytic				X					X					X							
	Other P[illegible]ytic																					
	Unknown [illegible] other																					
SEASONS	Winter	X																				
	Spring		X													X						SUMMER
	Summer	X													X	X						
	Fall														X	X						
TEMPERATURE	Eutherma[illegible]																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

LYNGBYA MARTENSIANA

		Boh 1901	T-I 1910	Esm 1914	B-P 1923	Gel 1932	Kis 1940	Gel 1942	Mec 1954	Des 1959	Tam 1959	Ana 1961	Pre 1962	Alm 1963	Tam 1964	P&M 1968	HGS 1969	L&P 1970	WES 1973		CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				MESOSAPROBIC
	Mesosaprobic																				
	alpha range (strong)													X	X						
	beta range (weak)														X						
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				INDIFFERENT
	Limnophilous																				
	Indifferent			*		*		*				*									
	Rheophilous													X							
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				CRENOPHILOUS (THERMAL)
	Lentic: Lakes & Ponds								X	X											
	Lentic: Bogs or Swamps		X																		
	Lotic: Crenophilous (general)	X																			
	Lotic: Crenophilous (thermal)	X		X	X		X				X										
	Lotic: Rivers & Streams		X																		
	Aerophilous or Terrestrial			X									X			X					
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)					X									X			X			PLANKTONIC, EPIPHYTIC
	Euplanktonic																				
	Tychoplanktonic											a									
	Periphytic (Aufwuchs)																X				
	Epipelic																				
	Epilithic																				
	Epiphytic		X							X				X							
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																	X	X		ALL TIMES OF YEAR
	Spring																	X	X		
	Summer																	X	X		
	Fall																	X	X		
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

MERISMOPEDIA CONVOLUTA

		K&M 1908	Gei 1932	Des 1959	Pre 1962	Mat 1970	T&T 1971	NMt 1972	O&O 1972	W&S 1973	Dor 1974	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											EURYSAPROBIC
	Mesosaprobic											
	alpha range (strong)							#				
	beta range (weak)							#				
	Oligosaprobic	X										
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Eurynalobous or Eurynaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic										X	LAKES & PONDS
	Lentic: Lakes & Ponds						X			X		
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)										X	
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams			X								
	Aerophilous or Terrestrial											
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)			X								EURYECIOUS
	Euplanktonic											
	Tychoplanktonic				X							
	Periphytic (Aufwuchs)								X			
	Epipelic											
	Epilithic											
	Epiphytic		#									
	Other Periphytic				X							
	Unknown or other											
SEASONS	Winter											SUMMER
	Spring											
	Summer									X		
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

MERISMOPEDIA ELEGANS

		Smi 1920	Smi 1924	Fle 1925	Pro 1928	Gel 1932	Red 1935	H-P 1938	Gel 1942	Nee 1948	C&K 1954	Rou 1957	Des 1959	Tam 1959	Pre 1962	P&M 1968	P&K 1968	Mat 1970	T&T 1971	WGS 1973	CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic											+									
	Mesotrophic																				
	Oligotrophic						X														± EURYTROPHIC
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)										X										
	beta range (weak)										X										
	Oligohalobous										X										EURYHALOBOUS
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline										?										
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous					=		=	=												
	Indifferent																				LIMNOPHILOUS
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X	X												X			X		X	
	Lentic: Bogs or Swamps														X						
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams												X								
	Aerophilous or Terrestrial																				LAKES & PONDS
	Estuarine																				
	Littoral (Litoral)				X																
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious													X							
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X	X	X		X					X			X	X			X	
	Euplanktonic														X						
	Tychoplanktonic	X																			
	Periphytic (Aufwuchs)																				
	Epipelic																	=			PLANKTONIC
	Epilithic																				
	Epiphytic					=															
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																			X	
	Summer										X						X				SUMMER
	Fall										X										
TEMPERATURE	Euthermal																				
	Mesothermal															X					
	Oligothermal																				
	Stenothermal															X					MESOTHERMAL, STENOTHERMAL
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Proschkina-Lavrenko et Makarova 1968 - 22-27°C; 31.76-35.58 o/oo salt

MERISMOPEDIA GLAUCA (First of 2 profile sheets)

		Kof 1908	KgM 1908	Smi 1920	Pro 1928	B-P 1928	Sku 1929	Klo 1930	Bud 1930	Gel 1932	Red 1935	H-F 1938	Ris 1938	Nyg 1945	JHT 1952	CSK 1954	Che 1955	Rou 1957	Tam 1959	Des 1959	Jor 1959	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkaliobiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic		X						X									X			X	
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic						X															
	Mesotrophic																					
	Oligotrophic										X						I					
	Dystrophic																					
	Unknown or other														O							
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)															X						
	beta range (weak)															X						
	Oligohalobous																					
	Halophilous																					
	Indifferent							X														
	Halophobous															?						
	Eurynalobous or Eurynaline							X								X						
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous										=		=									
	Indifferent																					CONSENSUS ON FOLLOWING PAGE
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic					X																
	Lentic: Lakes & Ponds			X		X											X			X		
	Lentic: Bogs or Swamps																			X		
	Lotic: Crenophilous (general)																				X	
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams					X														X		
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)				X																	
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious					I												X				
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X			X					X			X					X				
	Euplanktonic																					
	Tychoplanktonic			X		X						X		X								
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic									X												
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter							X														
	Spring																					
	Summer	X						X														
	Fall	X						X														
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																	X				
	Eurythermal																					
	Unknown or other																					

MERISMOPEDIA GLAUCA (Last of 2 profile sheets)

Louis et Peeters 1967 - 1-15°C; pH 7.4
Proschkina-Lavrenko et Makarova 1968 - 17.7-26.6°C, .12-12 o/oo salt

		Mar 1961	Pre 1962	Tam 1964	L&P 1967	Pet 1967	Pet 1967a	L&A 1967	Col 1967	B&A 1968	P&M 1968	H&W 1969	Tam 1969	Mat 1970	Sac 1971	Sal 1971	O&P 1972	S-F 1972	W&S 1973	P&M 1973	Moo 1974a	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)			X														X		X		OLIGOSAPROBIC
	Oligosaprobic																			X		
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					EURYTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					EURYHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic				X																	
	Lentic: Lakes & Ponds		X						X						X	X			X			
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (gereral)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial													X								EURYECIOUS
	Estuarine																					
	Littoral (Litoral)						X		X													
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X	X	X				X					X	X						
	Euplanktonic		P																			
	Tychoplanktonic		X																			
	Periphytic (Aufwucns)																					PLANKTONIC (TYCHOPLANKTONIC)
	Epipelic																				X	
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter				X																	
	Spring																					SUMMER, FALL
	Summer				X			X						X				X				
	Fall				X			X					X	X								
TEMPERATURE	Euthermal																					
	Mesothermal										X											
	Oligothermal																					MESOTHERMAL, METATHERMAL
	Stenothermal																					
	Metathermal										X											
	Eurythermal																					
	Unknown or other																					

MERISMOPEDIA MINIMA

		Gel 1932	Maz 1955	Ska 1956	Des 1959	Sin 1960	Tam 1964a	Tam 1964b	C-C 1966	Pet 1967	Fel 1967	PRM 1968	See 1972	Gaz 1972							CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic		X																		
	Mesosaprobic																				
	alpha range (strong)		X																		
	beta range (weak)						X														
	Oligosaprobic																				EURYSAPROBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				± RHEOPHILOUS
	Rheophilous						X														
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic										X										
	Lentic: Lakes & Ponds	X			X									X							
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial																				LAKES & PONDS
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X		X	X	X		X		X	X	X							
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				PLANKTONIC
	Epilithic	X																			
	Epiphytic						X														
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer					X			X				X								SUMMER
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

MERISMOPEDIA PUNCTATA

Liebetanz 1926 - experimental maximum resistance 2 o/oo salt
Proschkina-Lavrenko et Makarova 1968 - .12-12.35 o/oo salt, 17.2-27.7°C
Venkateswarlu 1970 - favored by high temperature & high organic matter: favored by low dissolved O_2 & high organic matter

		Sml 1920	Pro 1928	Gel 1932	Ilf 1938	Nec 1948	Jar 1952	Que 1955	Des 1959	Tam 1959	Pre 1962	Leb 1965	Gol 1967	Lez 1967	Lev 1970	Val 1971	Pez 1971	Sac 1971	PEM 1973	Kel 1973b	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																		X	X		
	Oligosaprobic																					MESOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic							J				#				#						± OLIGOSAPROBIC
	Dystrophic																					
	Unknown or other						7															
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					± EURYHALOBOUS
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																			S		
CURRENT	Limnobiontic																					
	Limnophilous			#	#																	
	Indifferent								#													
	Rheophilous																					± LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X		X				X	X		X						X			X		
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)			X																		
	Lotic: Crenophilous (thermal)			X	X															X		
	Lotic: Rivers & Streams								X													
	Aerophilous or Terrestrial																					± EURYECIOUS
	Estuarine																					
	Littoral (Litoral)		X													#	X					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other				8				X													
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X										X	X	X						
	Euplanktonic																					
	Tychoplanktonic	X			X																	
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC (TYCHOPLANKTONIC)
	Epilithic											X										
	Epiphytic			#																		
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring											X										
	Summer													X	X							SUMMER
	Fall													X		X						
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

MERISMOPEDIA TENUISSIMA

Singh 1960 - favored by low organic content; correlation with high nitrate & phosphate content, low CO_2 & O_2 content
Proschkina-Lavrenko et Makarova 1968 - .12-12.5 o/oo salt, 14.9-25.8°C

		Smi 1920	Skv 1922	Gel 1932	Red 1935	H-P 1938	Con 1942	Nec 1948	Nys 1949	Jar 1952	Cgk 1954	Tam 1959	Des 1959	ZGM 1961	Pre 1962	Tam 1964	Sin 1968	Ogp 1972	PGM 1973	Lez 1971	Val 1971	CONSENSUS
pH	Acidobiontic																					
	Acidophilous														#							
	Indifferent																					
	Alkalipnilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)													X	X					X		EURYSAPROBIC Without value as indicator of pollution - Fjerdingstad 1964
	beta range (weak)													X	X	X				X		
	Oligosaprobic													X								
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic								#											#		EURYTROPHIC
	Mesotrophic																					
	Oligotrophic																				#	
	Dystrophic																					
	Unknown or other									7												
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous				X						X											EURYHALOBOUS
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous										X											
	Halophilous																					
	Indifferent																					
	Halophobous										2											
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous			#		#																LIMNOPHILOUS
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic											X										LAKES & PONDS
	Lentic: Lakes & Ponds	X				X							X				X					
	Lentic: Bogs or Swamps						9															
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious						9	8														
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X								X	X			X	X	X		X	X	PLANKTONIC (TYCHOPLANKTONIC)
	Euplanktonic																					
	Tychoplanktonic	X				X																
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic											X										
	Epiphytic			X								X				X						
	Other Periphytic																					
	Unknown or other											m										
SEASONS	Winter																					SUMMER
	Spring																					
	Summer										X						X	X			X	
	Fall										X						X	X				
TEMPERATURE	Euthermal																					EURYTHERMAL
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal											X										
	Unknown or other																					

MICROCOLEUS SUBTORULOSUS

		K&M 1908	Til 1910	Gel 1932	Kol 1935	Gel 1942	Lie 1951	Pal 1959	Tam 1959	Lie 1962	N&S 1973	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)											
	Oligosaprobic	X		X		X			X			OLIGOSAPROBIC
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other							B				
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Euryhaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous											
	Indifferent			=		=	=		=			INDIFFERENT
	Rheophilous											
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic			X								
	Lentic: Lakes & Ponds											
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)											
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams											
	Aerophilous or Terrestrial		X									BENTHIC, TERRESTRIAL
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)											
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)									X		EPILITHIC, EPIPHYTIC
	Epipelic											
	Epilithic						X		X			
	Epiphytic			X			X					
	Other Periphytic											
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer									X		SUMMER
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

MICROCROCIS GEMINATA

		Gel 1932	H-P 1938	Gel 1942	D&D 1956	R&B 1959	Rou 1965	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic							
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytropnic							
	Eutrophic							
	Mesotrophic							Associated with higher nutrient levels - Round 1965
	Oligotrophic							
	Dystropnic							
	Unknown or other					X		
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous	X	X	X				
	Indifferent							LIMNOPHILOUS
	Rheophilous							
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic				X			
	Lentic: Lakes & Ponds							
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams							
	Aerophilous or Terrestrial							BENTHIC
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)				X	X		
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)							
	Epipelic					X		EPIPELIC
	Epilithic							
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring							
	Summer							
	Fall							
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

MICROCYSTIS AERUGINOSA (First of 3 profile sheets)

Czernin-Chudenitz 1955 - maximum development 15-23°C.
Gerloff *et al.* 1952 - has a much higher requirement for N than other elements & may limit growth in natural waters.
Fitzgerald *et al.* 1952 - .2 mg/l copper sulphate is toxic

Gerloff *et al.* 1950 - maximal growth when N/P ratio = 75/1.

		Lem 1907	Kof 1908	KM 1908	Sml 1920	Skv 1922	Ros 1928	Gel 1932	Red 1935	H-F 1938	Gab 1939	Sch 1939	Nee 1948	Nys 1949	Kol 1950	Lie 1951	Tar 1952	Cgk 1954	Tel 1955	C-C 1955	Mab 1956	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)														X							
	Oligosaprobic			X																		
	Saprophilic													X								
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																		X			
	Eutrophic							X					X									
	Mesotrophic															1				X	X	
	Oligotrophic												r									
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																X					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																X	2				
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent						#															
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds			X					X													
	Lentic: Bogs, or Swamps													X				X				
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X		X	X	X	X	X			8										
	Euplanktonic			X										X			X			X		
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other						b															
SEASONS	Winter				X																	
	Spring																					
	Summer																	X				
	Fall	X			X					X				X								
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																	(a)				

CONSENSUS ON PAGE AFTER NEXT

MICROCYSTIS AERUGINOSA (Second of 3 profile sheets)

Singh 1960 - indifferent to high nitrate and phosphate content; correlation with high CO_2 content.
Proschkina-Lavrenko et Makarova 1968 - c .12-12 o/oo salt

		S-H 1956	Raw 1956	Sku 1956	Col 1957	Tam 1959	R&B 1959	Des 1959	Fot 1959	Sin 1960	Mar 1961	Pre 1962	Lun 1962	Lie 1962	Sel 1963	F&S 1965	Rou 1965	Bee 1965	Pet 1967	Dut 1967	PEM 1968	CONSENSUS
PH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)		X											X								
	Oligosaprobic		X																			
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic		X																			
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic						X					X	X					X				
	Mesotrophic		X																			
	Oligotrophic															#						
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous							#						#								
	Indifferent																					CONSENSUS ON FOLLOWING PAGE
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds				X			X					X									
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious						X					#										
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X	X	X		X			X	X		X	X				X	X	X	
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic															X						
	Other Periphytic																					
	Unknown or other							b	b													
SEASONS	Winter													X	X						X	
	Spring													X	X			X			X	
	Summer												X									
	Fall										X					X						
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal						X															
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

MICROCYSTIS AERUGINOSA (Last of 3 profile sheets)

Radzimovsky 1971 - no adverse effects with 50 mg C/l humic acid; even tolerates and grows well with 100 mg C/l humic acid

		BgK 1968	Bak 1969	Nor 1969	TGM 1969	SSG 1970	Ley 1970	Sto 1970	SGP 1971	Sae 1971	Oks 1971	Rad 1971	Lin 1972	O&P 1972	Cap 1972	Nol 1972	Cez 1972	Oir 1973	W&S 1973	Dor 1974	Sze 1975	CONSENSUS
pH	Acidobiontic																					
	Acidophilous											#										
	Indifferent																					ACIDOPHILOUS ?
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)															X						
	Oligosaprobic																					EURYSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic								#				X				X					
	Mesotrophic																					± EUTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					EURYHALOBOUS
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																			X		
	Lentic: Lakes & Ponds										X								X			
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																			X		
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																		X			
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																X					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X		X	X	X		X		X		X	X	X			X				
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																		b			
SEASONS	Winter																					
	Spring													X							X	SUMMER
	Summer			X		X	X							X					X			
	Fall																				X	
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					PROBABLY
	Stenothermal																					POLYTHERMOUS
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

MICROCYSTIS ELABENS

			Lem 1903	Bru 1903	Til 1910	Pro 1928	Cel 1932	L-P 1938	Jar 1952	Mes 1954	Des 1959	Tam 1959	Mat 1970	Sae 1971								CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkaliobiontic																					
	Unknown or other																					
SAPROBIA	Polysaprobic or Saprobiontic																					
	Mesosapronic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENTS	Polytrophic																					
	Eutrophic							E														
	Mesotrophic																					
	Oligotrophic													X								EURYTROPHIC
	Dystrophic																					
	Unknown or other																					
HALINITY	Euhaliobous or Polyhaliobous																					
	Mesohaliobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohaliobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhaliobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous						X	X														
	Indifferent																					
	Rheophilous																					LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds				X					X	X			X								
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X		X	X			X		X										
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)						X															
	Epipelic																					PLANKTONIC
	Epilithic			X																		
	Epiphytic			X																		
	Other Periphytic																					
	Unknown or other																					
SEASON	Winter		X																			
	Spring		X																			
	Summer		X		X																	SUMMER, FALL
	Fall		X										X									
TEMPERATURE	Eutherm.																					
	Mesothermal																					
	Oligothermal																					
	Stenotherm.																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Bücher 1949 - foul sapropelic mud

MICROCYSTIS FLOSAQUAE

Singh 1960 - correlation with high nitrate & phosphate content & high temperature; favored by low organic content

		Smi 1920	Gel 1932	Cha 1940	Kol 1950	Lie 1951	Jar 1952	S-H 1956	Raw 1956	Keh 1956	Mab 1956	Des 1959	Tam 1959	Lie 1962	Cla 1962a	Rou 1965	Lep 1967	Sin 1968	Tam 1969	Not 1972	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																			#		
	beta range (weak)					X		X a						X						#		
	Oligosaprobic				X													#				β MESOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic						i		X	X	X					X						
	Mesotrophic										X	X										
	Oligotrophic										X	X										± EUTROPHIC
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryneline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		i #			i #								i #								
	Indifferent																					
	Rheophilous																					LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X		X								X						X				
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																				X	
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious												X		d							
	Unknown or other														e							
SPECIFIC HABITAT	Planktonic (Pelagic)		X			X		X			X	X	X	X			X	X				
	Euplanktonic	X																				
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC (EUPLANKTONIC)
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other											b										
SEASONS	Winter																					
	Spring																					
	Summer			X		X								X				X	X			SUMMER
	Fall																		X			
TEMPERATURE	Eutherma																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal												X									STENOTHERMAL
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

MICROCYSTIS INCERTA

Proschkina-Lavrenko et Makarova 1968 - .10-5.5 o/oo salt, 18.9-20°C

		Lem 1903	KgM 1908	Sml 1920	Gel 1932	H-P 1938	Nee 1948	Kol 1950	Iar 1952	Nce 1954	Sku 1956	Beh 1956	Prc 1962	Rou 1965	PgM 1968	Ohs 1970	Tst 1971	Ogp 1972	Hor 1973	PgM 1973	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkalipnilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																		X	X		
	Oligosaprobic		X					X												X		OLIGOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytropnic																					
	Eutropnic									1			#		#							
	Mesotrophic																					EUTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic												X	X							X	
	Lentic: Lakes & Ponds				X						X			X				X				
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																				X	
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					LAKES & PONDS
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other							8														
SPECIFIC HABITAT	Planktonic (Pelagic)		X			X	X				X	X		X		X	X		X		X	
	Euplanktonic																					
	Tychoplanktonic				X																	
	Periphytic (Aufwuchs)																					PLANKTONIC (TYCHOPLANKTONIC)
	Epipelic																					
	Epilithic																					
	Epipnytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter		X																			
	Spring																	X	X			SUMMER, WINTER
	Summer		X															X				
	Fall		X																			
TEMPERATURE	Eutherma1																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

MICROCYSTIS VIRIDIS

		Lem 1903	Pro 1928	Gel 1932	Il-P 1938	Jar 1952	Tel 1955	Mab 1956	Des 1959	Fot 1959	Rou 1965	Sae 1971	Olr 1973	CONSENSUS
pH	Acidobiontic													
	Acidophilous													
	Indifferent													
	Alkaliphilous													
	Alkalibiontic													
	Unknown or other													
SAPROBIAN	Polysaprobic or Saprobiontic													
	Mesosaprobic													
	alpha range (strong)													
	beta range (weak)													
	Oligosaprobic													
	Saprophilic													
	Saprozenous													
	Katharobic or Saprophobic													
	Unknown or other													
NUTRIENT	Polytrophic													
	Eutrophic				X	X	X			X	X			
	Mesotrophic													
	Oligotrophic													EUTROPHIC
	Dystrophic													
	Unknown or other													
HALOBION	Euhalobous or Polyhalobous													
	Mesohalobous													
	alpha range (strong)													
	beta range (weak)													
	Oligohalobous													
	Halophilous													
	Indifferent													
	Halophobous													
	Euryhalobous or Euryhaline													
	Unknown or other													
CURRENT	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													
	Rheobiontic													
	Unknown or other													
GENERAL HABITAT	Benthic													
	Lentic: Lakes & Ponds		X	X	X		X			X				
	Lentic: Bogs or Swamps													
	Lotic: Crenophilous (general)													
	Lotic: Crenophilous (thermal)													
	Lotic: Rivers & Streams													
	Aerophilous or Terrestrial													
	Estuarine													LAKES & PONDS
	Littoral (Litoral)													
	Neritic													
	Oceanic													
	Eurytopic or Euryecious													
	Unknown or other													
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X		X	X	X			X				
	Euplanktonic													
	Tychoplanktonic													
	Periphytic (Aufwuchs)													
	Epipelic													
	Epilithic													PLANKTONIC
	Epiphytic													
	Other Periphytic													
	Unknown or other		b	b				b						
SEASONS	Winter	X												
	Spring	X												
	Summer	X												ALL TIMES OF YEAR
	Fall	X												
TEMPERATURE	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Unknown or other													

MICROCYSTIS WESENBERGII

		Jun 1962	Oct 1973	Dec 1975	CONSENSUS
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
	Unknown or other				
SAPROBIAN	Polysaprobic or Saprobiontic				
	Mesosaprobic				
	alpha range (strong)				
	beta range (weak)				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Katharobic or Sapropnobic				
	Unknown or other				
NUTRIENT	Polytrophic				
	Eutrophic	X			
	Mesotrophic				
	Oligotrophic				EUTROPHIC
	Dystrophic				
	Unknown or other				
HALOBION	Euhalobous or Polyhalobous				
	Mesohalobous				
	alpha range (strong)				
	beta range (weak)				
	Oligohalobous				
	Halophilous				
	Indifferent				
	Halophobous				
	Euryhalobous or Euryhaline				
	Unknown or other				
CURRENT	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
	Unknown or other				
GENERAL HABITAT	Benthic				
	Lentic: Lakes & Ponds	X			
	Lentic: Bogs or Swamps				
	Lotic: Crenophilous (general)				
	Lotic: Crenophilous (thermal)				
	Lotic: Rivers & Streams				
	Aerophilous or Terrestrial				LAKES & PONDS
	Estuarine				
	Littoral (Litoral)				
	Neritic				
	Oceanic				
	Eurytopic or Euryecious				
	Unknown or other				
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X	X	
	Euplanktonic				
	Tychoplanktonic				
	Periphytic (Aufwuchs)				
	Epipelic				PLANKTONIC
	Epilithic				
	Epiphytic				
	Other Periphytic				
	Unknown or other				
SEASONS	Winter				
	Spring				
	Summer				
	Fall				
TEMPERATURE	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Unknown or other				

NODULARIA SPUMIGENA

Proschkina-Lavrenko et Makarova 1968 - 15-26°C, 1.4-12.5 o/oo salt

		Til 1910	Gal 1932	H-P 1938	Lie 1951	Mec 1954	Des 1959	Pal 1959	Pre 1962	Pan 1964	Tam 1964b	Mat 1966	Aez 1967a	Pet 1967	Pez 1968	P&M 1971	T&T 1972	MgP 1973	WØl 1973	P&M 1973	W&S 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)				X															X		β MESOSAPROBIC
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																X					β MESOHALOBOUS
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		#	#			#															LIMNOPHILOUS
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X				X			X			X					X				X	
	Lentic: Bogs or Swamps	X																			X	
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)											#	X									
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		#			X		X			X					X						
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)		#																			PLANKTONIC
	Epipelic																					
	Epilithic																					
	Epiphytic								X													
	Other Periphytic																					
	Unknown or other		b																			
SEASONS	Winter																					
	Spring																		X			SUMMER
	Summer									X			X		X							
	Fall												X									
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

NOSTOC CARNEUM

		SGC 1903	Till 1910	B-P 1923	Cel 1932	H-P 1938	Lie 1951	Mce 1954	Pre 1962	Lie 1962	Bou 1966	Pez 1967								CONSENSUS
pH	Acidobiontic																			
	Acidophilous																			
	Indifferent																			
	Alkaliphilous																			
	Alkalibiontic																			
	Unknown or other																			
SAPROBIAN	Polysaprobic or Saprobiontic																			
	Mesosaprobic																			
	alpha range (strong)																			
	beta range (weak)						X			X										β MESOSAPROBIC
	Oligosaprobic																			
	Saprophilic																			
	Saproxenous																			
	Katharobic or Saprophobic																			
	Unknown or other																			
NUTRIENT	Polytrophic																			
	Eutrophic																			
	Mesotrophic																			
	Oligotrophic																			
	Dystrophic																			
	Unknown or other																			
HALOBION	Euhalobous or Polyhalobous																			
	Mesohalobous																			
	alpha range (strong)																			
	beta range (weak)																			
	Oligohalobous																			
	Halophilous																			
	Indifferent																			
	Halophobous																			
	Euryhalobous or Euryhaline																			
	Unknown or other																			
CURRENT	Limnobiontic																			
	Limnophilous				x	x			x											
	Indifferent																			
	Rheophilous																			LIMNOPHILOUS
	Rheobiontic																			
	Unknown or other																			
GENERAL HABITAT	Benthic																			
	Lentic: Lakes & Ponds							X												
	Lentic: Bogs or Swamps									X										
	Lotic: Crenophilous (general)		X																	
	Lotic: Crenophilous (thermal)																			
	Lotic: Rivers & Streams	X	X								X									RIVERS & STREAMS
	Aerophilous or Terrestrial																			
	Estuarine																			
	Littoral (Litoral)																			
	Neritic																			
	Oceanic																			
	Eurytopic or Euryecious																			
	Unknown or other																			
SPECIFIC HABITAT	Planktonic (Pelagic)				x			x												
	Euplanktonic																			
	Tychoplanktonic																			
	Periphytic (Aufwuchs)				x															
	Epipelic																			
	Epilithic			X																PLANKTONIC
	Epiphytic																			
	Other Periphytic																			
	Unknown or other																			
SEASONS	Winter																			
	Spring																			
	Summer																			
	Fall																			
TEMPERATURE	Euthermal																			
	Mesothermal																			
	Oligothermal																			
	Stenothermal																			
	Metathermal																			
	Eurythermal																			
	Unknown or other																			

NOSTOC CAERULEUM (COERULEUM)

		1910 Til	1925 Fle	1928 Pro	1932 Gel	1933 Dop	1938 H-P	1942 Gel	1962 Pre	1965 Rou	1969 H&S	1971 T&T	CONSENSUS
pH	Acidobiontic												
	Acidophilous												
	Indifferent												
	Alkaliphilous												
	Alkalibiontic												
	Unknown or other												
SAPROBIAN	Polysaprobic or Saprobiontic												
	Mesosaprobic												
	alpha range (strong)												
	beta range (weak)												
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Katharobic or Saprophobic												
	Unknown or other												
NUTRIENT	Polytrophic												
	Eutrophic								X				
	Mesotrophic												
	Oligotrophic												EUTROPHIC
	Dystrophic												
	Unknown or other												
HALOBION	Euhalobous or Polyhalobous												
	Mesohalobous												
	alpha range (strong)												
	beta range (weak)												
	Oligohalobous												
	Halophilous												
	Indifferent												
	Halophobous												
	Euryhalobous or Euryhaline												
	Unknown or other												
CURRENT	Limnobiontic												
	Limnophilous				=		=						
	Indifferent												
	Rheophilous												LIMNOPHILOUS
	Rheobiontic												
	Unknown or other												
GENERAL HABITAT	Benthic												
	Lentic: Lakes & Ponds	X							X		X		
	Lentic: Bogs or Swamps												
	Lotic: Crenophilous (general)												
	Lotic: Crenophilous (thermal)												
	Lotic: Rivers & Streams												
	Aerophilous or Terrestrial									—			LAKES & PONDS,
	Estuarine												LITTORAL
	Littoral (Litoral)	=	X	X									
	Neritic												
	Oceanic												
	Eurytopic or Euryecious												
	Unknown or other												
SPECIFIC HABITAT	Planktonic (Pelagic)			X					X				
	Euplanktonic												
	Tychoplanktonic												
	Periphytic (Aufwuchs)												
	Epipelic												EPIPHYTIC
	Epilithic								X				
	Epiphytic	X			X	X	X						
	Other Periphytic												
	Unknown or other												
SEASONS	Winter												
	Spring												
	Summer												
	Fall												
TEMPERATURE	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Unknown or other												

NOSTOC LINCKIA

		S&G 1903	Fil 1910	Pro 1928	Gel 1932	H-P 1938	Gel 1942	Oro 1943	Lie 1951	Ges 1959	Sin 1961	Lie 1962	Pre 1962	Per 1964	Gol 1967	HGS 1969					CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)								X			X									
	Oligosaprobic																				β MESOSAPROBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophooic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophooous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous				=	=	=		=			=									
	Indifferent																				LIMNOPHILOUS
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X	X										X								
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)		X					X							X						
	Lotic: Crenophilous (thermal)							X													
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial									X	X		X	I		X					TERRESTRIAL
	Estuarine																				
	Littoral (Litoral)												X								
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious					=															
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)			X			=														
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)						=														
	Epipelic																				EPILITHIC
	Epilithic		X												X						
	Epiphytic		X																		
	Other Periphytic																				
	Unknown or other								D												
SEASONS	Winter																				
	Spring																				
	Summer								X			X									SUMMER
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

NOSTOC MUSCORUM

		Til 1910	Bri 1919	B-P 1923	Gei 1932	Aer 1937	Con 1942	M&B 1954	B&M 1954	Des 1959	Sin 1961	Lun 1962	Pre 1962	Fog 1962	Pad 1967	M&S 1968	W&K 1971	W&S 1973			CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic															#					OLIGOTROPHIC
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds																				
	Lentic: Bogs or Swamps												X	X							
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)			t																	
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial	X	X	X	X	t	X	I	e	X	I	I	I	I	X	X	X				TERRESTRIAL (TRUE SOIL ALGA)
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)																				
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				
	Epilithic	X		X		X															EPILITHIC
	Epiphytic	X				X															
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Allison *et al.* 1937 - optimum pH 7-8.5
Hoare *et al.* 1970 - has been grown heterotrophically in dark

NOSTOC PALUDOSUM

		Til 1910	Pro 1928	Gei 1932	H-P 1938	Mee 1954	Des 1959	Tam 1959	Sin 1961	Pre 1962	Kol 1967	Lep 1967	Hgs 1969	Mat 1970	Wgk 1971	Wgs 1973					CONSENSUS
pH	Acidobiontic																				
	Acidophilous										*	*									
	Indifferent																				ACIDOPHILOUS
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic														*						OLIGOTROPHIC
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous			*	*		*														
	Indifferent																				LIMNOPHILOUS
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X				X															
	Lentic: Bogs or Swamps									X	X										
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial								1				X			X					LENTIC, TERRESTRIAL
	Estuarine																				
	Littoral (Litoral)		X																		
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)					X															
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				EPIPHYTIC
	Epilithic													X							
	Epiphytic							X				X									
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal											X									
	Oligothermal																				
	Stenothermal											X									MESOTHERMAL, STENOTHERMAL
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Louis et Peeters 1967 - 17-19°C, pH 5.2-5.6

NOSTOC SPHAERICA (SPHAERICUM)

		Til 1910	B-P 1923	Gel 1932	B-P 1935	Gel 1942	Dro 1943	Des 1959	Pre 1962	W&K 1963	Gol 1967	M&S 1968	Bac 1968	H&S 1969	Mat 1970	Dob 1970	W&S 1973	Sch 1975			CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic												X								EURYSAPROBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic												X	X							
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				LIMNOPHILOUS
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X				X															
	Lentic: Bogs or Swamps							X													
	Lotic: Crenophilous (general)									X											
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams	X	X			X															
	Aerophilous or Terrestrial	X	X			X		X	X		X										AEROPHILOUS TERRESTRIAL
	Estuarine																				
	Littoral (Litoral)								X												
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)																				
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)													X							
	Epipelic																				
	Epilithic	X	X				X	X			X			X							EPILITHIC
	Epiphytic	X						X													
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring															X					
	Summer	X																			SUMMER, SPRING
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Boye-Petersen 1923 - 13-17°C

NOSTOC ZETTERSTEDTII

		Gel 1932	Kol 1935	H-P 1938	Gel 1942	CONSENSUS
pH	Acidobiontic					
	Acidophilous					
	Indifferent					
	Alkaliphilous					
	Alkalibiontic					
	Unknown or other					
SAPROBIAN	Polysaprobic or Saprobiontic					
	Mesosaprobic					
	alpha range (strong)					
	beta range (weak)					
	Oligosaprobic		X			OLIGOSAPROBIC
	Saprophilic					
	Saproxenous					
	Katharobic or Saprophobic					
	Unknown or other					
NUTRIENT	Polytrophic					
	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
	Unknown or other					
HALOBION	Euhalobous or Polyhalobous					
	Mesohalobous					
	alpha range (strong)					
	beta range (weak)					
	Oligohalobous					
	Halophilous					
	Indifferent					
	Halophobous					
	Euryhalobous or Euryhaline					
	Unknown or other					
CURRENT	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
	Unknown or other					
GENERAL HABITAT	Benthic					
	Lentic: Lakes & Ponds	X	X	X		
	Lentic: Bogs or Swamps					
	Lotic: Crenophilous (general)					
	Lotic: Crenophilous (thermal)					
	Lotic: Rivers & Streams					
	Aerophilous or Terrestrial					LAKES & PONDS
	Estuarine					
	Littoral (Litoral)					
	Neritic					
	Oceanic					
	Eurytopic or Euryecious					
	Unknown or other					
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X			
	Euplanktonic					
	Tychoplanktonic					
	Periphytic (Aufwuchs)					
	Epipelic					PLANKTONIC
	Epilithic					
	Epiphytic					
	Other Periphytic					
	Unknown or other					
SEASONS	Winter					
	Spring					
	Summer					
	Fall					
TEMPERATURE	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Unknown or other					

ONCOBYRSA CESATIANA (CESATII)

		S&G 1903	Ti 1910	Fri 1929	Gei 1932	Goj 1967	Bac 1967	Bac 1968	Mat 1970	Fri 1973	CONSENSUS
pH	Acidobiontic										
	Acidophilous										
	Indifferent										
	Alkaliphilous										
	Alkalibiontic										
	Unknown or other										
SAPROBIAN	Polysaprobic or Saprobiontic										
	Mesosaprobic										
	alpha range (strong)										
	beta range (weak)										
	Oligosaprobic						X	X			
	Saprophilic						X	X			EURYSAPROBIC
	Saprozenous										
	Katharobic or Saprophobic						X	X			
	Unknown or other										
NUTRIENT	Polytrophic										
	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
	Unknown or other										
HALOBION	Euhalobous or Polyhalobous										
	Mesohalobous										
	alpha range (strong)										
	beta range (weak)										
	Oligohalobous										
	Halophilous										
	Indifferent										
	Halophobous										
	Euryhalobous or Euryhaline										
	Unknown or other										
CURRENT	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous	#	#	#		P					RHEOPHILOUS
	Rheobiontic										
	Unknown or other										
GENERAL HABITAT	Benthic										
	Lentic: Lakes & Ponds										
	Lentic: Bogs or Swamps										
	Lotic: Crenophilous (general)										
	Lotic: Crenophilous (thermal)										
	Lotic: Rivers & Streams		X								
	Aerophilous or Terrestrial										
	Estuarine										RIVERS & STREAMS
	Littoral (Litoral)										
	Neritic										
	Oceanic										
	Eurytopic or Euryecious										
	Unknown or other										
SPECIFIC HABITAT	Planktonic (Pelagic)										
	Euplanktonic										
	Tychoplanktonic										
	Periphytic (Aufwuchs)				X	X					
	Epipelic										
	Epilithic			X							EPIPHYTIC
	Epiphytic	X	X	X	X						
	Other Periphytic										
	Unknown or other										
SEASONS	Winter										
	Spring										
	Summer										
	Fall					X	X	X			SUMMER
TEMPERATURE	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Unknown or other										

Backhaus 1968 - moderately strong periodicity

OSCILLATORIA AGARDHII

		Lem 1903	KAM 1908	Hud 1930	Gel 1932	Rol 1935	Nye 1945	UBF 1952	KAK 1954	S-H 1956	R&B 1959	Fot 1959	And 1961	Edm 1962	Lie 1962	Fre 1967	Ibe 1967	Ben 1969	Sae 1971	Lim 1974	NGH 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																	#				
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)									X				X								§ MESOSAPROBIC, OLIGOSAPROBIC
	Oligosaprobic		X	X								X	X									
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
TROPHIC	Polytrophic																					
	Eutrophic										X		X	X			X				X	± EUTROPHIC
	Mesotrophic																					
	Oligotrophic																			#		
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous									X												
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous					X				X												OLIGOHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous														#							
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds				X														X			
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																		X			
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)		X			X				X	X						X				X	
	Euplanktonic							X														
	Tychoplanktonic															X						
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other				b																	
SEASONS	Winter		X																			
	Spring		X															X				SPRING, SUMMER
	Summer														X		X					
	Fall																					
TEMPERATURE	Eutherma																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Conrad et Kufferath 1954 - no conspicuous seasonal periodicity
Bennett 1969 - may have value as an indicator of acid mine waters

OSCILLATORIA AMOENA

		Col 1896	Sau 1901	Til 1910	Pro 1928	Gei 1932	Gei 1942	Sku 1956	Des 1959	Pre 1962	Min 1962	Bac 1968	Mat 1970	Erg 1970	Dor 1974						CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				SAPROPHILIC
	Mesosaprobic																				
	alpha range (strong)											X									
	beta range (weak)																				
	Oligosaprobic																				
	Saprophilic											X									
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				LIMNOPHILOUS
	Limnophilous					X					X										
	Indifferent						X														
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic													X							± EURYECIOUS
	Lentic: Lakes & Ponds							X													
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)									X				X							
	Lotic: Crenophilous (thermal)		X																		
	Lotic: Rivers & Streams							X													
	Aerophilous or Terrestrial							X			X										
	Estuarine																				
	Littoral (Litoral)				X					X											
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)							X													EPILITHIC
	Euplanktonic																				
	Tychoplanktonic									X											
	Periphytic (Aufwuchs)											X		X							
	Epipelic																				
	Epilithic	X		X		X															
	Epiphytic											X									
	Other Periphytic	X		X																	
	Unknown or other																				
SEASONS	Winter																				EURYTHERMAL
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Eutherma1																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal					X															
	Unknown or other																				

OSCILLATORIA AMPHIBIA

		Til 1910	Fri 1914	B-P 1923	Bru 1930	Gel 1932	Gel 1942	Fje 1950	Sku 1956	Des 1959	Tam 1959	Ana 1961	Hir 1961	Pre 1962	S&P 1963	Tam 1964	Fje 1964	Fje 1965a	Erg 1970	Mat 1970	Sch 1970	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic				X																	
	alpha range (strong)																					
	beta range (weak)							#														
	Oligosaprobic							#														SAPROPHILIC
	Saprophilic																X	X			X	
	Saproxenous																					
	Katharobic or Saprophobic							#														
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					EURYHALOBOUS
	Halophilous														X							
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline											X										
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous					#																
	Indifferent						#											#				INDIFFERENT
	Rheophilous															X						
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic	X															X	X				
	Lentic: Lakes & Ponds	X									X			X								
	Lentic: Bogs or Swamps												X	X								
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)			X	X		X	X													X	
	Lotic: Rivers & Streams										X											
	Aerophilous or Terrestrial	X			X	#					X											± EURYECIOUS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)									X	X											
	Euplanktonic																					
	Tychoplanktonic								X													
	Periphytic (Aufwuchs)								X					X					#			
	Epipelic																					PERIPHYTIC
	Epilithic	X									X									X		
	Epiphytic															X						
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer																					
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					EURYTHERMAL
	Metathermal																					
	Eurythermal			X								X										
	Unknown or other																					

Budde 1932 - Salzgräben und Salinen, 60 o/oo Salt.
Mann et Schlachting 1967 - 56.7-41.1 C.
Schwabe 1970 - 36-44°C.

OSCILLATORIA AMPHIGRANULATA

Conrad et Kufferath 1954 - December maximum
Castenholz 1976 - wide tolerance for various concentrations of sulphur; upper limits 56°C

		Gei 1932	Il-P 1938	C&K 1954	Pan 1959	Des 1959	Cla 1962b	Jun 1962	Cas 1976	CONSENSUS
pH	Acidobiontic									
	Acidophilous									
	Indifferent									
	Alkaliphilous									
	Alkalibiontic									
	Unknown or other									
SAPROBIAN	Polysaprobic or Saprobiontic									
	Mesosaprobic									
	alpha range (strong)									
	beta range (weak)									
	Oligosaprobic									SAPROPHILIC ?
	Saprophilic			?						
	Saproxenous									
	Katharobic or Saprophobic									
	Unknown or other									
NUTRIENT	Polytrophic									
	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
	Unknown or other									
HALOBION	Euhalobous or Polyhalobous									
	Mesohalobous			X						
	alpha range (strong)									
	beta range (weak)									
	Oligohalobous			X						EURYHALOBOUS
	Halophilous									
	Indifferent									
	Halophobous									
	Euryhalobous or Euryhaline									
	Unknown or other									
CURRENT	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
	Unknown or other									
GENERAL HABITAT	Benthic									
	Lentic: Lakes & Ponds	X	X #	X		X	X			
	Lentic: Bogs or Swamps									
	Lotic: Crenophilous (general)							X		
	Lotic: Crenophilous (thermal)							X		
	Lotic: Rivers & Streams									
	Aerophilous or Terrestrial									LAKES & PONDS
	Estuarine									
	Littoral (Litoral)									
	Neritic									
	Oceanic									
	Eurytopic or Euryecious									
	Unknown or other						X			
SPECIFIC HABITAT	Planktonic (Pelagic)					X		X		
	Euplanktonic									
	Tychoplanktonic									
	Periphytic (Aufwuchs)									
	Epipelic									PLANKTONIC
	Epilithic									
	Epiphytic									
	Other Periphytic									
	Unknown or other									
SEASONS	Winter			X						
	Spring									
	Summer									
	Fall									
TEMPERATURE	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Unknown or other									

OSCILLATORIA ANGUINA

		K&M 1908	Til 1910	Esm 1914	B-P 1923	Ger 1932	B-P 1935	Sku 1956	Des 1959	Ana 1961	Pre 1962	Tam 1964	Dob 1966	Dob 1969	Dob 1970	Mat 1970	WgS 1973				CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				OLIGOSAPROBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous					≈			≈												
	Indifferent				≈		≈														INDIFFERENT
	Rheophilous											X									
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic				X						X										
	Lentic: Lakes & Ponds			X				X								X					
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)	X																			
	Lotic: Crenophilous (thermal)				X	X															
	Lotic: Rivers & Streams	X																			
	Aerophilous or Terrestrial			X			U	X													± EURYECIOUS
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious				≈																
	Unknown or other											≈	≈	≈							
SPECIFIC HABITAT	Planktonic (Pelagic)															X					
	Euplanktonic																				
	Tychoplanktonic							X													
	Periphytic (Aufwuchs)																				TYCHOPLANKTONIC, EPIPHYTIC
	Epipelic																				
	Epilithic																				
	Epiphytic											X									
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				THERMOPHILE
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

OSCILLATORIA ANGUSTA

		Gei 1932	Des 1959	Pre 1962	Fie 1964	Erg 1970	Geg 1972	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic				α			
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic							POLYSAPROBIC
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic				X			
	Lentic: Lakes & Ponds	X	X	X			X	
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams		X					
	Aerophilous or Terrestrial							LAKES & PONDS
	Estuarine							
	Littoral (Litoral)		X					
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)						X	
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)				≡			
	Epipelic							PLANKTONIC
	Epilithic							
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring							
	Summer							
	Fall							
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

OSCILLATORIA BORNETII

		Kel 1932	U-P 1938	Sku 1956	RGR 1959	Pre 1962	Lez 1967	Bis 1974	CONSENSUS
pH	Acidobiontic								ACIDOPHILOUS
	Acidophilous		x						
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic								
	Unknown or other								
NUTRIENT	Polytrophic								EUTROPHIC, MESOTROPHIC
	Eutrophic			x					
	Mesotrophic			x					
	Oligotrophic								
	Dystrophic								
	Unknown or other								
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligonalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Euryhalobous or Eurynaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
	Unknown or other								
GENERAL HABITAT	Benthic						x		LAKES & PONDS
	Lentic: Lakes & Ponds	x	x			x			
	Lentic: Bogs or Swamps								
	Lotic: Crenophilous (general)								
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams								
	Aerophilous or Terrestrial								
	Estuarine								
	Littoral (Litoral)								
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other								
SPECIFIC HABITAT	Planktonic (Pelagic)			x					TYCHOPLANKTONIC
	Euplanktonic								
	Tychoplanktonic		x		x				
	Periphytic (Aufwuchs)								
	Epipelic								
	Epilithic								
	Epiphytic		x						
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								SPRING, FALL
	Spring					x			
	Summer								
	Fall					x			
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

OSCILLATORIA BREVIS

		Boh 1901	KGM 1908	B-P 1923	Gel 1932	Kol 1935	H-P 1938	Lin 1943	Wys 1949	Fie 1950	Wel 1951	C&K 1954	Sla 1956	Des 1959	Fot 1959	Ana 1961	Lie 1962	Cla 1964a	Fie 1964	Fie 1965a	Sla 1966	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic												X						X	X		
	Mesosaprobic																					
	alpha range (strong)		X			X			X	X		X			X		X				X	
	beta range (weak)								X													α MESOSAPROBIC, SAPROBIONTIC
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous											X	X									
	Mesohaloous											X										
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous											X	X									EURYHALOBOUS
	Halophilous											X										
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline											X				X						
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				=		=										=					
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																		X	X	X	
	Lentic: Lakes & Ponds						X							X								
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)	X		X																		
	Lotic: Rivers & Streams													X	X							
	Aerophilous or Terrestrial			X		A	=							X								± EURYECIOUS
	Estuarine																					
	Littoral (Litoral)							X														
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																	pU				
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)						X										X					
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)				=																	PLANKTONIC
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																X					
	Spring																X					FALL, ALL TIMES OF YEAR
	Summer																X					
	Fall												X				X					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					EURYTHERMAL
	Metathermal																					
	Eurythermal																X					
	Unknown or other																					

Proschkina-Lavrenko et Makarova 1968 - .12-12.5 o/oo salt
Palmer 1970 - ranked as tenth most pollution tolerant species of *Oscillatoria*

OSCILLATORIA CHALYBEA

Proschkina-Lavrenko et Makarova 1968 - .12-1.4 o/oo salt.
Venkateswarlu 1970 - favored by high temperature and high organic matter; favored by low dissolved O_2 and high organic matter; inverse relationship with nitrates.

Palmer 1970 - sixth most pollution tolerant *Oscillatoria* species.

		KGM 1908	Bez 1930	Cet 1932	Kol 1935	Cet 1942	Con 1942	Hav 1944	Kol 1950	CEK 1954	Maz 1955	Sla 1956	Fot 1959	Ana 1961	Pre 1962	Tie 1962	Fie 1964	Bro 1965	Fie 1965a	Tez 1971	MGS 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic										X					X		X				
	alpha range (strong)		X																			
	beta range (weak)	X			X			X	X		X	X	X							X		
	Oligosaprobic																					
	Saprophilic																					
	Saprozenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)								X	X						X						
	beta range (weak)																					
	Oligohalobous																					
	Halophilous								X													
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other												X									
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent		#												#							
	Rheophilous				#																	
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic					β																
	Lentic: Lakes & Ponds															X		X				
	Lentic: Bogs or Swamps																			X	X	
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)		X		X																	
	Lotic: Rivers & Streams													X								
	Aerophilous or Terrestrial															X						
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other					d																
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)												X									
	Epipelic																					
	Epilithic		X																			
	Epiphytic													X								
	Other Periphytic																					
	Unknown or other																					
SEASONS	winter																					
	Spring													X								
	Summer												X	X								
	Fall												X	X								
TEMPERATURE	Euthermal							X														
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other										X											

CONSENSUS:

- pH: ¤ MESOSAPROBIC, SAPROBIONTIC
- SAPROBIAN: EURYHALOBOUS
- NUTRIENT: LIMNOPHILOUS
- HALOBION: ± EURYECIOUS WITH TENDENCY TOWARD CRENOPHILOUS
- CURRENT: EPILITHIC
- GENERAL HABITAT: FALL, ALL TIMES OF YEAR
- SPECIFIC HABITAT: EURYTHERMAL
- SEASONS
- TEMPERATURE

OSCILLATORIA CHLORINA

		Cla 1908	K&M 1908	Fre 1930	Kol 1935	Gel 1942	Fie 1950	Kol 1950	C&K 1954	Mecq 1955	S-H 1956	Sla 1956	Fot 1959	Des 1959	Lie 1962	Fie 1964	Fie 1965a	Sla 1966	Bac 1968	Fie 1971	S&E 1972	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic				X		X	X		X	X	X	X		X	X	X	X	X	α		SAPROBIONTIC
	Mesosaprobic																					
	alpha range (strong)		X		X		X	X		X									X			
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic								X													
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous								X													
	alpha range (strong)																					
	beta range (weak)																			X		
	Oligohalobous								X													OLIGOHALOBOUS, MESOHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds														X	X	X					
	Lentic: Bogs or Swamps												X									
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)			X		X																
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial												X									CRENOPHILOUS, BENTHIC
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic	X																				
	Periphytic (Aufwuchs)																		#			TYCHOPLANKTONIC
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring													X	X							FALL, ALL TIMES OF YEAR
	Summer													X	X							
	Fall							X														
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Liebmann 1962 - insensitive to high H_2S concentration.
Palmer 1970 - ranked as third most pollution tolerant *Oscillatoria* species.

OSCILLATORIA CURVICEPS

		Lem 1907	TT 1910	B-P 1923	Gel 1932	Con 1942	Fle 1950	Ohe 1955	Des 1959	Pre 1962	Fle 1964	Fle 1965a	Sae 1971	W&S 1973	CONSENSUS
pH	Acidobiontic														
	Acidophilous														
	Indifferent														
	Alkaliphilous														
	Alkalibiontic														
	Unknown or other														
SAPROBIAN	Polysaprobic or Saprobiontic														
	Mesosaprobic														
	alpha range (strong)						X								
	beta range (weak)														
	Oligosaprobic														SAPROPHILIC
	Saprophilic										X	X			
	Saproxenous														
	Katharobic or Saprophobic														
	Unknown or other														
NUTRIENT	Polytrophic														
	Eutrophic														
	Mesotrophic														
	Oligotrophic							X							OLIGOSAPROBIC (±)
	Dystrophic														
	Unknown or other														
HALOBION	Euhalobous or Polyhalobous														
	Mesohalobous														
	alpha range (strong)														
	beta range (weak)														
	Oligohalobous														
	Halophilous														
	Indifferent														
	Halophobous														
	Euryhalobous or Euryhaline														
	Unknown or other														
CURRENT	Limnobiontic														
	Limnophilous														
	Indifferent				=	=									INDIFFERENT
	Rheophilous														
	Rheobiontic														
	Unknown or other														
GENERAL HABITAT	Benthic										X	X			
	Lentic: Lakes & Ponds		X						X				X		
	Lentic: Bogs or Swamps				X										
	Lotic: Crenophilous (general)														
	Lotic: Crenophilous (thermal)														
	Lotic: Rivers & Streams													X	
	Aerophilous or Terrestrial		X												LAKES & PONDS
	Estuarine														
	Littoral (Litoral)			X											
	Neritic														
	Oceanic														
	Eurytopic or Euryecious					D									
	Unknown or other														
SPECIFIC HABITAT	Planktonic (Pelagic)	X							X						
	Euplanktonic														
	Tychoplanktonic									X					
	Periphytic (Aufwuchs)														PLANKTONIC (TYCHOPLANKTONIC)
	Epipelic														
	Epilithic														
	Epiphytic														
	Other Periphytic														
	Unknown or other														
SEASONS	Winter														
	Spring														
	Summer														
	Fall														
TEMPERATURE	Euthermal														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Unknown or other														

OSCILLATORIA FORMOSA

Palmer 1970 - ranked as seventh most pollution tolerant *Oscillatoria* species.

		Bor 1901	K&M 1908	B-P 1923	Gel 1932	Kol 1935	Fle 1950	Kol 1950	Lie 1951	Sla 1956	Des 1959	For 1959	Beh 1961	Ana 1961	Pre 1962	Lie 1962	Fle 1964	Fle 1965a	Bro 1965	Mat 1970	Dor 1974	CONSENSUS
pH	Acidobiontic																					INDIFFERENT
	Acidophilous																					
	Indifferent												#									
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																X	X				α MESOSAPROBIC, SAPROBIONTIC
	Mesosaprobic																					
	alpha range (strong)		X			X	X	X	X	X		X				X						
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic												X									
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					EURYHALOBOUS
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline													X								
	Unknown or other																					
CURRENT	Limnobiontic																					INDIFFERENT
	Limnophilous																					
	Indifferent				#																	
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																X	X			X	CRENOPHILOUS
	Lentic: Lakes & Ponds										X				X				X			
	Lentic: Bogs or Swamps														X							
	Lotic: Crenophilous (general)		X		X			X														
	Lotic: Crenophilous (thermal)	X	X		X			X													X	
	Lotic: Rivers & Streams										X											
	Aerophilous or Terrestrial			X							X				X							
	Estuarine																					
	Littoral (Litoral)														X							
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious			X																		
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					EPILITHIC
	Euplanktonic																					
	Tychoplanktonic														X							
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic										X								X			
	Epiphytic																		X			
	Other Periphytic																		X			
	Unknown or other																					
SEASONS	Winter														X	X						ALL TIMES OF YEAR
	Spring																					
	Summer														X	X						
	Fall														X							
TEMPERATURE	Euthermal																					EURYTHERMAL
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal													X								
	Unknown or other													X								

OSCILLATORIA GEMINATA

		Til 1910	Gel 1932	Gel 1942	JHr 1952	Mee 1954	Sku 1956	Pan 1959	Ana 1961	Cla 1962a	Cla 1962b	LGO 1965	Lea 1967	PEM 1968	WGS 1973	Dor 1974						CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic				i																	EUTROPHIC, DYSTROPHIC
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic												#									
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent				#																	INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds							X		X			X			X	X					
	Lentic: Bogs or Swamps			X																		
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)	X	X	X									X			X						CRENOPHILOUS
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious												#									
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)							X	X							X						
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					PLANKTONIC
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter													X	X							
	Spring																					SUMMER
	Summer														X		X					
	Fall																					
TEMPERATURE	Euthermal													X	X							
	Mesothermal																					
	Oligothermal													X	X							MESOTHERMAL, OLIGOTHERMAL, EURYTHERMAL
	Stenothermal																					
	Metathermal													X								
	Eurythermal																					
	Unknown or other										V											

Louis et Olbrechts 1965 - 0-23°C, pH 4.8-5.2
Mann and Schlichting 1967 - 56.7°C thermal limit

OSCILLATORIA GUTTULATA

Palmer 1970 - ranked eleventh most pollution tolerant of *Oscillatoria* species

		Gel 1932	H-P 1938	C&K 1954	Tho 1974	CONSENSUS
pH	Acidobiontic					
	Acidophilous					
	Indifferent					
	Alkaliphilous					
	Alkalibiontic					
	Unknown or other					
SAPROBIAN	Polysaprobic or Saprobiontic					
	Mesosaprobic					
	alpha range (strong)					
	beta range (weak)					
	Oligosaprobic					SAPROPHILIC
	Saprophilic			X		
	Saproxenous					
	Katharobic or Saprophobic					
	Unknown or other					
NUTRIENT	Polytrophic					
	Eutrophic					
	Mesotrophic					
	Oligotrophic					
	Dystrophic					
	Unknown or other					
HALOBION	Euhalobous or Polyhalobous					
	Mesohalobous			?		
	alpha range (strong)					
	beta range (weak)					
	Oligohalobous			X		
	Halophilous					OLIGOHALOBOUS
	Indifferent					
	Halophobous					
	Euryhalobous or Euryhaline					
	Unknown or other					
CURRENT	Limnobiontic					
	Limnophilous					
	Indifferent					
	Rheophilous					
	Rheobiontic					
	Unknown or other					
GENERAL HABITAT	Benthic					
	Lentic: Lakes & Ponds	X	X	X		
	Lentic: Bogs or Swamps					
	Lotic: Crenophilous (general)					
	Lotic: Crenophilous (thermal)					
	Lotic: Rivers & Streams					
	Aerophilous or Terrestrial					LAKES & PONDS
	Estuarine					
	Littoral (Litoral)					
	Neritic					
	Oceanic					
	Eurytopic or Euryecious					
	Unknown or other					
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X	X		
	Euplanktonic					
	Tychoplanktonic					
	Periphytic (Aufwuchs)					
	Epipelic					PLANKTONIC
	Epilithic					
	Epiphytic					
	Other Periphytic					
	Unknown or other					
SEASONS	Winter					
	Spring					
	Summer					FALL
	Fall			X		
TEMPERATURE	Euthermal					
	Mesothermal					
	Oligothermal					
	Stenothermal					
	Metathermal					
	Eurythermal					
	Unknown or other					

OSCILLATORIA LACUSTRIS

Mabille 1956 - environments deprived of O_2

		Gel 1932	H-P 1938	Nye 1945	Jar 1952	C&K 1954	Mab 1956	Des 1959	R&B 1959	Pre 1962	Sae 1971	W&S 1973	CONSENSUS
pH	Acidobiontic												
	Acidophilous												
	Indifferent												
	Alkaliphilous												
	Alkalibiontic												
	Unknown or other												
SAPROBIAN	Polysaprobic or Saprobiontic												
	Mesosaprobic												
	alpha range (strong)												
	beta range (weak)												
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Katharobic or Saprophobic												
	Unknown or other												
NUTRIENT	Polytrophic												
	Eutrophic								X	X			
	Mesotrophic												± EUTROPHIC
	Oligotrophic												
	Dystrophic												
	Unknown or other				7			6					
HALOBION	Euhalobous or Polyhalobous												
	Mesohalobous						X						
	alpha range (strong)												
	beta range (weak)												
	Oligohalobous						X						EURYHALOBOUS
	Halophilous												
	Indifferent												
	Halophobous						2						
	Euryhalobous or Euryhaline												
	Unknown or other												
CURRENT	Limnobiontic												
	Limnophilous												
	Indifferent	*	*										INDIFFERENT
	Rheophilous												
	Rheobiontic												
	Unknown or other												
GENERAL HABITAT	Benthic												
	Lentic: Lakes & Ponds		X					X			X	X	
	Lentic: Bogs or Swamps												
	Lotic: Crenophilous (general)												
	Lotic: Crenophilous (thermal)												
	Lotic: Rivers & Streams												LAKES & PONDS
	Aerophilous or Terrestrial												
	Estuarine												
	Littoral (Litoral)										X	*	
	Neritic												
	Oceanic												
	Eurytopic or Euryecious												
	Unknown or other												
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X			X	X	X	X	X			
	Euplanktonic			X									
	Tychoplanktonic												
	Periphytic (Aufwuchs)												PLANKTONIC (EUPLANKTONIC)
	Epipelic												
	Epilithic												
	Epiphytic												
	Other Periphytic												
	Unknown or other												
SEASONS	Winter												
	Spring						X						SUMMER
	Summer												
	Fall												
TEMPERATURE	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Unknown or other												

OSCILLATORIA LAUTERBORNII

Liebmann 1962 - facultative anaerobic
Palmer 1970 - ranked ninth most pollution tolerant *Oscillatoria* species.

		Gei 1932	Fie 1950	Lie 1951	Mez 1955	Fot 1959	Pal 1959	C&R 1961	Lie 1962	Fie 1964	Mat 1970	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic		X	X	X	X			X	X		
	Mesosaprobic											
	alpha range (strong)		X									
	beta range (weak)											
	Oligosaprobic											POLYSAPROBIC
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic											
	Unknown or other						C					
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Euryhaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic									X	C	
	Lentic: Lakes & Ponds											
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)											
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams							X				BENTHIC, RIVERS & STREAMS
	Aerophilous or Terrestrial											
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)	X						X				
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)											
	Epipelic											PLANKTONIC
	Epilithic											
	Epiphytic											
	Other Periphytic											
	Unknown or other											
SEASONS	Winter							X	X			
	Spring								X			WINTER
	Summer											
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

OSCILLATORIA LIMNETICA

		Lem 1903	Pro 1928	Gel 1932	H-P 1938	Nys 1945	Jar 1952	Mee 1954	Des 1959	Rgb 1959	Tam 1959	Cla 1962a	Pre 1962	Wut 1965	Ebe 1967	Bak 1968	Kel 1973b	Tho 1974	Sez 1974	Nöl 1974	Tez 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic					L	L												X	*		
	Mesotrophic																					
	Oligotrophic																					EUTROPHIC
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds			X	X			X	X								X	X				
	Lentic: Bogs or Swamps												X									
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams								X													
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other											X										
SPECIFIC HABITAT	Planktonic (Pelagic)		X	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)			*																		
	Epipelic																					PLANKTONIC
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter	X	X																			
	Spring	X																				
	Summer	X													X							SUMMER
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

OSCILLATORIA LIMOSA (First of 2 profile sheets)

		K&M 1908	B-P 1923	Pro 1928	Bud 1930	Get 1932	Kol 1935	G&P 1936	H-P 1938	Now 1940	Vil 1941	Fie 1950	Kol 1950	Wie 1951	C&K 1954	Sla 1955	Mez 1955	S-H 1956	Rou 1957	Kol 1957	Tam 1959	CONSENSUS
pH	Acidobiontic																					
pH	Acidophilous																					
pH	Indifferent																					
pH	Alkaliphilous																					
pH	Alkalibiontic																					
pH	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic									X	X						X					
SAPROBIAN	Mesosaprobic																		X			
SAPROBIAN	alpha range (strong)							X		X	X	X		X		X		X X		X		
SAPROBIAN	beta range (weak)	X			X		X X	X				X X				X				X		
SAPROBIAN	Oligosaprobic									X		X X	X						X			
SAPROBIAN	Saprophilic														X							
SAPROBIAN	Saproxenous																					
SAPROBIAN	Katharobic or Saprophobic																					
SAPROBIAN	Unknown or other																					
NUTRIENT	Polytrophic																					
NUTRIENT	Eutrophic																					
NUTRIENT	Mesotrophic																					
NUTRIENT	Oligotrophic																					
NUTRIENT	Dystrophic																					
NUTRIENT	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
HALOBION	Mesohalobous														X							
HALOBION	alpha range (strong)																					
HALOBION	beta range (weak)																					
HALOBION	Oligohalobous														X							
HALOBION	Halophilous																					
HALOBION	Indifferent																					
HALOBION	Halophobous																					
HALOBION	Euryhalobous or Euryhaline														X							
HALOBION	Unknown or other																					
CURRENT	Limnobiontic																					
CURRENT	Limnophilous																					
CURRENT	Indifferent		#			#			#													CONSENSUS ON FOLLOWING PAGE
CURRENT	Rheophilous																					
CURRENT	Rheobiontic																					
CURRENT	Unknown or other																					
GENERAL HABITAT	Benthic																					
GENERAL HABITAT	Lentic: Lakes & Ponds						X			X												
GENERAL HABITAT	Lentic: Bogs or Swamps																					
GENERAL HABITAT	Lotic: Crenophilous (general)		X																			
GENERAL HABITAT	Lotic: Crenophilous (thermal)																					
GENERAL HABITAT	Lotic: Rivers & Streams																					
GENERAL HABITAT	Aerophilous or Terrestrial		X																			
GENERAL HABITAT	Estuarine																					
GENERAL HABITAT	Littoral (Litoral)			X											X							
GENERAL HABITAT	Neritic																					
GENERAL HABITAT	Oceanic																					
GENERAL HABITAT	Eurytopic or Euryecious																					
GENERAL HABITAT	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)			X		X				X												
SPECIFIC HABITAT	Euplanktonic																					
SPECIFIC HABITAT	Tychoplanktonic																					
SPECIFIC HABITAT	Periphytic (Aufwuchs)					X				X												
SPECIFIC HABITAT	Epipelic																					
SPECIFIC HABITAT	Epilithic																					
SPECIFIC HABITAT	Epiphytic																				X	
SPECIFIC HABITAT	Other Periphytic																					
SPECIFIC HABITAT	Unknown or other																					
SEASONS	Winter																					
SEASONS	Spring																					
SEASONS	Summer																					
SEASONS	Fall																					
TEMPERATURE	Euthermal																					
TEMPERATURE	Mesothermal																					
TEMPERATURE	Oligothermal																					
TEMPERATURE	Stenothermal																					
TEMPERATURE	Metathermal																					
TEMPERATURE	Eurythermal																					
TEMPERATURE	Unknown or other																					

Liebetanz 1926 - maximum salt resistance 1 o/o NaCl.

OSCILLATORIA LIMOSA (Last of 2 profile sheets)

Louis et Peeters 1967 - 0-19°C, pH 5.1-7.4 (16-19°C, pH 6.9-7.4 range of elevated frequency)
Proschkina-Lavrenko et Makarova 1968 - 1.3-12.5 o/oo salt, 22-26°C
Palmer 1970 - ranked by 29 authors as the most pollution tolerant of all *Oscillatoria* species

		Hor 1959	Des 1959	SGS 1960	ZGM 1961	Pre 1962	Tam 1964	Rou 1964	Fie 1964	Fie 1965a	Fie 1965b	Sta 1966	L&P 1967	Bac 1967	Pet 1967a	Leg 1967	Bac 1968	Fie 1971	Buc 1971	W&S 1973	Bas 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic			X																		
	Mesosaprobic			X																		
	alpha range (strong)	X		X	X		X				X	X					X	X				
	beta range (weak)	X		X	X		X										X		X			± EURYSAPROBIC, PROBABLY SAPROPHILIC
	Oligosaprobic			X	X												X					
	Saprophilic								X	X							X					
	Saproxenous																X					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																	X				
	Mesotrophic																					± EURYTROPHIC
	Oligotrophic																	X				
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					EURYHALOBOUS
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		#			#												#				
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic								X	X		X									X	
	Lentic: Lakes & Ponds		X			X		X										X				
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																	X				
	Lotic: Rivers & Streams							X														BENTHIC, LAKES & PONDS +EURYECIOUS
	Aerophilous or Terrestrial																			X		
	Estuarine																					
	Littoral (Litoral)													X								
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious												X									
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic					X												X				
	Periphytic (Aufwuchs)													X			X					PLANKTONIC (TYCHOPLANKTONIC)
	Epipelic							X														
	Epilithic																			X		
	Epiphytic						X															
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter												X									
	Spring														X	X						ALL TIMES OF YEAR
	Summer												X	X		X						
	Fall												X			X						
TEMPERATURE	Euthermal																					
	Mesothermal												X									
	Oligothermal												X									MESOTHERMAL, OLIGOTHERMAL EURYTHERMAL
	Stenothermal																					
	Metathermal																					
	Eurythermal												X									
	Unknown or other																					

OSCILLATORIA MINIMA

		Gel 1932	Mez 1955	C&R 1961	Fie 1964	Fie 1965a	Cla 1965	B&K 1968	Gea 1972	CONSENSUS
pH	Acidobiontic									
	Acidophilous									
	Indifferent									
	Alkaliphilous									
	Alkalibiontic									
	Unknown or other									
SAPROBIAN	Polysaprobic or Saprobiontic		X	X	X					
	Mesosaprobic									
	alpha range (strong)		X							
	beta range (weak)									
	Oligosaprobic									SAPROBIONTIC
	Saprophilic									
	Saproxenous									
	Katharobic or Saprophobic									
	Unknown or other									
NUTRIENT	Polytrophic									
	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
	Unknown or other									
HALOBION	Euhalobous or Polyhalobous									
	Mesohalobous									
	alpha range (strong)									
	beta range (weak)									
	Oligohalobous									
	Halophilous									
	Indifferent									
	Halophobous									
	Euryhalobous or Euryhaline									
	Unknown or other									
CURRENT	Limnobiontic									
	Limnophilous									
	Indifferent									
	Rheophilous									
	Rheobiontic									
	Unknown or other									
GENERAL HABITAT	Benthic	C		X	X					
	Lentic: Lakes & Ponds							X		
	Lentic: Bogs or Swamps									
	Lotic: Crenophilous (general)									
	Lotic: Crenophilous (thermal)									
	Lotic: Rivers & Streams			X						BENTHIC,
	Aerophilous or Terrestrial									± EURYECIOUS
	Estuarine									
	Littoral (Litoral)									
	Neritic									
	Oceanic									
	Eurytopic or Euryecious									
	Unknown or other						Co			
SPECIFIC HABITAT	Planktonic (Pelagic)			X				X	X	
	Euplanktonic									
	Tychoplanktonic									
	Periphytic (Aufwuchs)									
	Epipelic									PLANKTONIC
	Epilithic									
	Epiphytic									
	Other Periphytic									
	Unknown or other									
SEASONS	Winter			X						
	Spring									SUMMER, WINTER
	Summer							X		
	Fall									
TEMPERATURE	Euthermal									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Unknown or other									

OSCILLATORIA NEGLECTA

		Gel 1932	Jmr 1952	Cla 1962a	Cla 1962b	Nag 1965	Cla 1965	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic							
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							LIGNOTROPH
	Oligotrophic							
	Dystrophic							
	Unknown or other		Y					
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous							
	Indifferent			#				INDIFFERENT
	Rheophilous							
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic							
	Lentic: Lakes & Ponds							
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams							
	Aerophilous or Terrestrial							CAVES
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other			◻	◻	◻	◻	
SPECIFIC HABITAT	Planktonic (Pelagic)			X				
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)	X						
	Epipelic							PERIPHYTIC
	Epilithic			X				
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring							
	Summer							
	Fall							
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

OSCILLATORIA NIGRA

		Til 1910	Gel 1932	Fot 1959	Mar 1961	Pre 1962	Fre 1964	Coc 1967	Bac 1968	CONSENSUS
pH	Acidobiontic									
	Acidophilous									
	Indifferent									
	Alkaliphilous									
	Alkalibiontic									
	Unknown or other									
SAPROBIAN	Polysaprobic or Saprobiontic						X			
	Mesosaprobic									
	alpha range (strong)									
	beta range (weak)									
	Oligosaprobic									β POLYSAPROBIC
	Saprophilic									
	Saproxenous									
	Katharobic or Saprophobic			X						
	Unknown or other									
NUTRIENT	Polytrophic									
	Eutrophic									
	Mesotrophic									
	Oligotrophic									
	Dystrophic									
	Unknown or other									
HALOBION	Euhalobous or Polyhalobous									
	Mesohalobous									
	alpha range (strong)									
	beta range (weak)									
	Oligohalobous									
	Halophilous									
	Indifferent									
	Halophobous									
	Euryhalobous or Euryhaline									
	Unknown or other									
CURRENT	Limnobiontic									
	Limnophilous	#								
	Indifferent		#							
	Rheophilous									INDIFFERENT
	Rheobiontic									
	Unknown or other									
GENERAL HABITAT	Benthic									
	Lentic: Lakes & Ponds				X		X			
	Lentic: Bogs or Swamps									
	Lotic: Crenophilous (general)									
	Lotic: Crenophilous (thermal)									
	Lotic: Rivers & Streams									
	Aerophilous or Terrestrial						X			LAKES & PONDS
	Estuarine									
	Littoral (Litoral)									
	Neritic									
	Oceanic									
	Eurytopic or Euryecious									
	Unknown or other									
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X						
	Euplanktonic									
	Tychoplanktonic									
	Periphytic (Aufwuchs)									
	Epipelic									PLANKTONIC
	Epilithic	#								
	Epiphytic									
	Other Periphytic									
	Unknown or other									
SEASONS	Winter									
	Spring							X		
	Summer							X		SPRING, SUMMER
	Fall									
TEMPERATURE	Eutherma1									
	Mesothermal									
	Oligothermal									
	Stenothermal									
	Metathermal									
	Eurythermal									
	Unknown or other									

Backhaus 1968 - strong, characteristic periodicity

OSCILLATORIA PLANCTONICA

Singh 1960 - favored by low organic content; correlation with high nitrate, phosphate, O_2, and CO_2 content & high temperature.

		Gei 1932	H-P 1938	Mee 1954	Tam 1959	Sin 1960	SGS 1960	Cla 1962b	Nai 1966	Sin 1968	Oks 1971	Whi 1973	Iez 1974	CONSENSUS
pH	Acidobiontic													
	Acidophilous													
	Indifferent													
	Alkaliphilous													
	Alkalibiontic													
	Unknown or other													
SAPROBIA	Polysaprobic or Saprobiontic													
	Mesosaprobic													
	alpha range (strong)													
	beta range (weak)						X							
	Oligosaprobic					=	X							OLIGOSAPROBIC
	Saprophilic													
	Saproxenous													
	Katharobic or Saprophobic													
	Unknown or other													
NUTRIENT	Polytrophic													
	Eutrophic												=	
	Mesotrophic													
	Oligotrophic													EUTROPHIC
	Dystrophic													
	Unknown or other													
HALOBION	Euhalobous or Polyhalobous													
	Mesohalobous													
	alpha range (strong)													
	beta range (weak)													
	Oligohalobous													
	Halophilous													
	Indifferent													
	Halophobous													
	Euryhalobous or Eurynaline													
	Unknown or other													
CURRENT	Limnobiontic													
	Limnophilous													
	Indifferent							=						
	Rheophilous													INDIFFERENT
	Rheobiontic													
	Unknown or other													
GENERAL HABITAT	Benthic													
	Lentic: Lakes & Ponds	X	X	X										
	Lentic: Bogs or Swamps													
	Lotic: Crenophilous (general)													
	Lotic: Crenophilous (thermal)													
	Lotic: Rivers & Streams													
	Aerophilous or Terrestrial													LAKES & PONDS
	Estuarine													
	Littoral (Litoral)													
	Neritic													
	Oceanic													
	Eurytopic or Euryecious													
	Unknown or other													
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X	X	X	X	X	X	X	X	X			
	Euplanktonic													
	Tychoplanktonic													
	Periphytic (Aufwuchs)													
	Epipelic													PLANKTONIC
	Epilithic													
	Epiphytic													
	Other Periphytic													
	Unknown or other											b		
SEASONS	Winter													
	Spring													
	Summer					X			X					FALL
	Fall					X		X	X					
TEMPERATURE	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Unknown or other													

OSCILLATORIA PRINCEPS

Singh 1960 - favored by low organic content; correlation with high nitrate and phosphate content & low O_2 and CO_2 content.
Proschkina-Lavrenko et Makarova 1968 - .12-2.5 o/oo salt, 18-26°C
Palmer 1970 - ranks fourth as the most pollution tolerant *Oscillatoria* species.

		K&M 1908	Beg 1930	Gei 1932	Kol 1935	Con 1942	Mes 1949	Kol 1950	Lie 1951	Sla 1956	Mes 1956	S-H 1956	W&A 1959	Ana 1961	Pre 1962	Lie 1962	Fie 1964	Fie 1965a	Jez 1971	S&E 1972	W&S 1973	CONSENSUS
pH	Acidobiontic																					
pH	Acidophilous																					
pH	Indifferent																					
pH	Alkaliphilous																					
pH	Alkalibiontic																					
pH	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																X	X				
SAPROBIAN	Mesosaprobic		X		X			X														
SAPROBIAN	alpha range (strong)	X							X	X		X	X			X				X	X	
SAPROBIAN	beta range (weak)																					α MESOSAPROBIC, SAPROBIONTIC
SAPROBIAN	Oligosaprobic																					
SAPROBIAN	Saprophilic																					
SAPROBIAN	Saproxenous																					
SAPROBIAN	Katharobic or Saprophobic																					
SAPROBIAN	Unknown or other																					
NUTRIENT	Polytrophic																					
NUTRIENT	Eutrophic						#															
NUTRIENT	Mesotrophic																					
NUTRIENT	Oligotrophic										#											± EURYTROPHIC
NUTRIENT	Dystrophic																					
NUTRIENT	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
HALOBION	Mesohalobous																					
HALOBION	alpha range (strong)																					
HALOBION	beta range (weak)																					
HALOBION	Oligohalobous																					
HALOBION	Halophilous																					
HALOBION	Indifferent																					
HALOBION	Halophobous																					
HALOBION	Euryhalobous or Euryhaline																					
HALOBION	Unknown or other																					
CURRENT	Limnobiontic																					
CURRENT	Limnophilous																					
CURRENT	Indifferent			#					#							#						INDIFFERENT
CURRENT	Rheophilous																					
CURRENT	Rheobiontic																					
CURRENT	Unknown or other																					
GENERAL HABITAT	Benthic								#								X	X				
GENERAL HABITAT	Lentic: Lakes & Ponds														X						X	
GENERAL HABITAT	Lentic: Bogs or Swamps														X							
GENERAL HABITAT	Lotic: Crenophilous (general)																					
GENERAL HABITAT	Lotic: Crenophilous (thermal)			X					X													
GENERAL HABITAT	Lotic: Rivers & Streams																				X	
GENERAL HABITAT	Aerophilous or Terrestrial			#																		± EURYECIOUS
GENERAL HABITAT	Estuarine																					
GENERAL HABITAT	Littoral (Litoral)																					
GENERAL HABITAT	Neritic																					
GENERAL HABITAT	Oceanic																					
GENERAL HABITAT	Eurytopic or Euryecious																					
GENERAL HABITAT	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)			#																		
SPECIFIC HABITAT	Euplanktonic																					
SPECIFIC HABITAT	Tychoplanktonic														X							
SPECIFIC HABITAT	Periphytic (Aufwuchs)			#																		
SPECIFIC HABITAT	Epipelic																					TYCHOPLANKTONIC
SPECIFIC HABITAT	Epilithic																					
SPECIFIC HABITAT	Epiphytic																					
SPECIFIC HABITAT	Other Periphytic																					
SPECIFIC HABITAT	Unknown or other																					
SEASONS	Winter															X					X	
SEASONS	Spring															X					X	ALL TIMES OF YEAR
SEASONS	Summer															X					X	
SEASONS	Fall															X					X	
TEMPERATURE	Euthermal													X								
TEMPERATURE	Mesothermal																					
TEMPERATURE	Oligothermal																					
TEMPERATURE	Stenothermal																					EUTHERMAL
TEMPERATURE	Metathermal																					
TEMPERATURE	Eurythermal																					
TEMPERATURE	Unknown or other																					

OSCILLATORIA PSEUDOGEMINATA

		Gel 1932	Jar 1952	Des 1959	Cla 1962b	Cla 1965	Pet 1967a	Waw 1973	CONSENSUS
pH	Acidobiontic								
	Acidophilous								
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)								
	Oligosaprobic								
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic								
	Unknown or other								
NUTRIENT	Polytrophic								
	Eutrophic								
	Mesotrophic								
	Oligotrophic								POLYHUMOS
	Dystrophic								
	Unknown or other		X						
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligohalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Euryhalobous or Euryhaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous								
	Rheobiontic								
	Unknown or other								
GENERAL HABITAT	Benthic								
	Lentic: Lakes & Ponds								
	Lentic: Bogs or Swamps								
	Lotic: Crenophilous (general)				X				
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams								
	Aerophilous or Terrestrial			X	X				TERRESTRIAL
	Estuarine								
	Littoral (Litoral)					X			
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other				X	X			
SPECIFIC HABITAT	Planktonic (Pelagic)						X		
	Euplanktonic								
	Tychoplanktonic								
	Periphytic (Aufwuchs)								
	Epipelic								EPILITHIC
	Epilithic	X	X	X					
	Epiphytic		X						
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								
	Spring								
	Summer								
	Fall								
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

OSCILLATORIA PUTRIDA

		K&M 1908	Cel 1932	Kol 1935	Boc 1949	Kol 1950	Lie 1951	C&K 1954	Mez 1955	Sla 1955	Sla 1956	Mor 1959	Lie 1962	Fis 1964	Fie 1965a	Lez 1967	Bac 1968	Lep 1970			CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic			X		X	X		X		X		X	X	X		X				
	Mesosaprobic						X														
	alpha range (strong)	X				X			X	X		X					X				
	beta range (weak)																				
	Oligosaprobic																				SAPROBIONTIC
	Saprophilic							X													
	Saprozenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)							X													
	beta range (weak)							X													
	Oligohalobous				X																± EURYHALOBOUS
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline							?													
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Bentnic		C											X	X						BENTHIC
	Lentic: Lakes & Ponds																				
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)																				
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial																				
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)																				
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																X	X			PERIPHYTIC
	Epipelic																				
	Epilithic																				
	Epiphytic											X									
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter							X					X			X					WINTER
	Spring												X								
	Summer												X								
	Fall							X													
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Kolkwitz 1935 - H_2S tolerant
Palmer 1970 - ranks fifth as the most pollution tolerant *Oscillatoria* species

OSCILLATORIA REDEKEI

		Ute 1925	Ver 1930	Gel 1932	Red 1935	H-P 1938	Lie 1951	Cok 1954	Sku 1956	Fot 1959	Cia 1962a	Lie 1962	Fie 1964	Fie 1965a	Mat 1970	Whi 1973						CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic												X	X								SAPROBIONTIC
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)						X					X										
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous		X				X															MESOHALOBOUS, OLIGOHALOBOUS
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous				X		X															
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent										X											INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic												X	X								
	Lentic: Lakes & Ponds			X		X										X						LAKES & PONDS, BOGS OR SWAMPS
	Lentic: Bogs or Swamps			X		X					X											
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)														X							
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other										X											
SPECIFIC HABITAT	Planktonic (Pelagic)	X		X		X	X	X	X	X	X	X										PLANKTONIC
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other															b						
SEASONS	Winter																					SPRING, FALL
	Spring						X			X					X							
	Summer							X														
	Fall						X			X					X							
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Conrad et Kufferath 1954 - pelophile

OSCILLATORIA RUBESCENS

Stadlemann 1971 - associated with very high N:P ratios (22:1)

		K&M 1908	Sml 1920	Kop 1924	Ger 1932	Kol 1935	H-P 1938	Lie 1951	C&K 1954	Fed 1956	Des 1959	Lie 1962	Pre 1962	Fin 1964	Bee 1965	Mut 1965	Ebe 1967	MGS 1969	Fre 1969	Fin 1971	Sta 1971	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)					X	X		X			X										
	Oligosaprobic					X																β MESOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic	X																				
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic						X	X	X		#			X	#		X		X	X		
	Mesotrophic						X	X														
	Oligotrophic						X	X														EUTROPHIC
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous								?													
	Halophilous																					PROBABLY
	Indifferent																					OLIGOHALOBOUS
	Halophobous								?													
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous						#					#										
	Indifferent																					
	Rheophilous																					LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds						X				X		X							X		
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial										X						X					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)			X		X				X	X				X	X				X		
	Euplanktonic	X	X																			
	Tychoplanktonic											X	X									
	Periphytic (Aufwuchs)																					
	Epipelic																					PLANKTONIC
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter					X	X					X		X						X		
	Spring					X	X													X	X	
	Summer					X	X													X	X	WINTER, FALL
	Fall					X	X								X				X	X	X	
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal			#		#																
	Stenothermal		X																			OLIGOTHERMAL,
	Metathermal																					STENOTHERMAL
	Eurythermal																					
	Unknown or other																					

OSCILLATORIA SANCTA

Palmer 1970 - ranks twelfth as most pollution tolerant of *Oscillatoria* species

		Til 1910	Jip 1928	Gel 1932	B-P 1935	H-P 1938	Gel 1942	Sku 1956	Des 1959	Ana 1961	Pre 1962	P&M 1968	Sac 1970	Pal 1970	W&S 1973	Tho 1974	K&S 1975				CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				POLLUTION TOLERANT
	Oligosaprobic																				
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other													C							
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent			=	=		=	=													INDIFFERENT
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X							X				X			X					
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)	X	X																		
	Lotic: Crenophilous (thermal)						X														
	Lotic: Rivers & Streams	X																			
	Aerophilous or Terrestrial	X	X	X	U	X	X		X						X						TERRESTRIAL
	Estuarine																				
	Littoral (Litoral)		X																		
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)			=					X				X			X	X				
	Euplanktonic																				
	Tychoplanktonic							X													
	Periphytic (Aufwuchs)			=		=															PLANKTONIC (TYCHOPLANKTONIC)
	Epipelic																				
	Epilithic		X	X		X															
	Epiphytic											X									
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				THERMOPHILE
	Metathermal																				
	Eurythermal																				
	Unknown or other										>										

OSCILLATORIA SIMPLICISSIMA

		Gei 1932	Des 1959	Fot 1959	CONSENSUS
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
	Unknown or other				
SAPROBIAN	Polysaprobic or Saprobiontic				
	Mesosaprobic				
	alpha range (strong)				
	beta range (weak)				
	Oligosaprobic				KATHAROBIC
	Saprophilic				
	Saproxenous				
	Katharobic or Saprophobic		X		
	Unknown or other				
NUTRIENT	Polytrophic				
	Eutrophic				
	Mesotrophic				
	Oligotrophic				
	Dystrophic				
	Unknown or other				
HALOBION	Euhalobous or Polyhalobous				
	Mesohalobous				
	alpha range (strong)				
	beta range (weak)				
	Oligohalobous				
	Halophilous				
	Indifferent				
	Halophobous				
	Euryhalobous or Euryhaline				
	Unknown or other				
CURRENT	Limnobiontic				
	Limnophilous	#			
	Indifferent				
	Rheophilous				LIMNOPHILOUS
	Rheobiontic				
	Unknown or other				
GENERAL HABITAT	Benthic				
	Lentic: Lakes & Ponds		X		
	Lentic: Bogs or Swamps				
	Lotic: Crenophilous (general)				
	Lotic: Crenophilous (thermal)				
	Lotic: Rivers & Streams	X			
	Aerophilous or Terrestrial				LAKES & PONDS,
	Estuarine				RIVERS & STREAMS
	Littoral (Litoral)				
	Neritic				
	Oceanic				
	Eurytopic or Euryecious				
	Unknown or other				
SPECIFIC HABITAT	Planktonic (Pelagic)		X		
	Euplanktonic				
	Tychoplanktonic				
	Periphytic (Aufwuchs)				
	Epipelic				PLANKTONIC
	Epilithic				
	Epiphytic				
	Other Periphytic				
	Unknown or other				
SEASONS	Winter				
	Spring				
	Summer				
	Fall				
TEMPERATURE	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Unknown or other				

Biswas 1926 - in salt lakes

OSCILLATORIA SPLENDIDA

		K&M 1908	B-P 1935	Kol 1935	Gea 1937	Il-P 1938	Tho 1944	Hdy 1949	Sla 1956	S-H 1956	Kol 1957	W&A 1959	Sin 1960	Pre 1962	Lie 1962	Min 1963	Fie 1964	Fie 1965a	Sla 1966	Bac 1968	Sin 1968	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic															X		X				
	Mesosaprobic																					
	alpha range (strong)	X		X	X		X	X	X	X	X			X					X	X		
	beta range (weak)																					
	Oligosaprobic																					α MESOSAPROBIC,
	Saprophilic																			X		± EURYSAPROBIC
	Saproxenous																					
	Katharobic or Saprophobic																	X				
	Unknown or other												m									
NUTRIENT	Polytrophic																					
	Eutrophic					≈																
	Mesotrophic																					
	Oligotrophic																					EUTROPHIC
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous		≈			≈																
	Indifferent													≈	≈							INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic															X	X	X				
	Lentic: Lakes & Ponds					X								X						X		
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)			X		X									X							
	Lotic: Rivers & Streams																					BENTHIC,
	Aerophilous or Terrestrial	X															X					LAKES & PONDS,
	Estuarine																					CRENOPHILOUS
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)					X						X			X					X		
	Euplanktonic																					
	Tychoplanktonic					X																
	Periphytic (Aufwuchs)																		X			
	Epipelic																					PLANKTONIC
	Epilithic																					(TYCHOPLANKTONIC)
	Epiphytic		X																			
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter														X							
	Spring														X							
	Summer											X		X						X		SUMMER
	Fall														X							
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Singh 1960 - correlation with high temperature and low O_2 content.
Whitford and Schumacher 1963 - optimum above 20°C
Palmer 1970 - ranked as eight most pollution tolerant of *Oscillatoria* species

OSCILLATORIA SUBTILISSIMA

		Sno 1903	Fil 1910	Gel 1932	Fie 1950	Mez 1955	Des 1959	Ana 1961	Cla 1962a	Fie 1964	Fie 1965a	Fie 1965b	PeV 1965	Bac 1968	WgS 1973	CONSENSUS
pH	Acidobiontic															
	Acidophilous															
	Indifferent															
	Alkaliphilous															
	Alkalibiontic															
	Unknown or other															
SAPROBIAN	Polysaprobic or Saprobiontic					X				X	X					
	Mesosaprobic															
	alpha range (strong)				X	X						X				
	beta range (weak)				X									R X		SAPROBIONTIC,
	Oligosaprobic													X X		± EURYSAPROBIC
	Saprophilic															
	Saproxenous															
	Katharobic or Saprophobic															
	Unknown or other															
NUTRIENT	Polytrophic															
	Eutrophic															
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
	Unknown or other															
HALOBION	Euhalobous or Polyhalobous															
	Mesohalobous															
	alpha range (strong)															
	beta range (weak)															
	Oligohalobous															
	Halophilous															
	Indifferent															
	Halophobous															
	Euryhalobous or Euryhaline															
	Unknown or other															
CURRENT	Limnobiontic															
	Limnophilous			#						#					#	
	Indifferent															LIMNOPHILOUS
	Rheophilous															
	Rheobiontic															
	Unknown or other															
GENERAL HABITAT	Benthic										X	X				
	Lentic: Lakes & Ponds			X						X		X		X	X	
	Lentic: Bogs or Swamps															
	Lotic: Crenophilous (general)															
	Lotic: Crenophilous (thermal)															
	Lotic: Rivers & Streams															LAKES & PONDS
	Aerophilous or Terrestrial															
	Estuarine															
	Littoral (Litoral)															
	Neritic															
	Oceanic															
	Eurytopic or Euryecious															
	Unknown or other									X						
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X					X								
	Euplanktonic															
	Tychoplanktonic															
	Periphytic (Aufwuchs)													X		PLANKTONIC
	Epipelic															
	Epilithic															
	Epiphytic															
	Other Periphytic															
	Unknown or other															
SEASONS	Winter															
	Spring															
	Summer															
	Fall															
TEMPERATURE	Euthermal															
	Mesothermal															
	Oligothermal															THERMOPHILE
	Stenothermal															
	Metathermal															
	Eurythermal															
	Unknown or other								X							

Anagnostides 1961 - oligothiophil

OSCILLATORIA TENUIS (First of 3 profile sheets)

		KgM 1908	Smi 1920	Hay 1921	B-P 1923	Pro 1928	Bud 1930	Bez 1930	Gel 1932	Dup 1933	Gep 1936	H-P 1938	Now 1940	Con 1942	Hay 1944	Wys 1949	Fie 1950	Kol 1950	Lie 1951	Wel 1951	Jar 1952	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic												X				X					
	Mesosaprobic	X		X													X					
	alpha range (strong)						X				X		X		X	X		X	X	X		
	beta range (weak)																X					
	Oligosaprobic							X					X									
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic							X														
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																				7	
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous								*			*		*					*			
	Indifferent				*																	CONSENSUS ON
	Rheophilous																					PAGE AFTER NEXT
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds		X																			
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					
	Estuarine																					
	Littoral (Litoral)					X																
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious				X									X								
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)					X			*			*										
	Euplanktonic																					
	Tychoplanktonic		X																			
	Periphytic (Aufwuchs)						*		*	X		*										
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer																					
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

OSCILLATORIA TENUIS (Second of 3 profile sheets)

Liebmann 1962 - in waters with high O_2 and high organic content.

		Hue 1952	Meg 1955	Sia 1955	Sia 1956	S-H 1956	Sku 1956	Hor 1959	Des 1959	Fot 1959	S&S 1960	Ana 1961	ZaM 1961	Cia 1962b	Lie 1962	Pre 1962	Min 1963	Fie 1964	Fie 1965a	Fie 1965b	Tam 1965	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic			X	X	X					X		X					X	X			
	Mesosaprobic																					
	alpha range (strong)	X	X	X	X	X		X		X	X		X		X					X		
	beta range (weak)										X		X									
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous													=	=							
	Indifferent																					CONSENSUS ON FOLLOWING PAGE
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																	X	X			
	Lentic: Lakes & Ponds								X							X						
	Lentic: Bogs or Swamps															X						
	Lotic: Crenophilous (general)								X													
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams								X													
	Aerophilous or Terrestrial								X								e					
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other													∞								
SPECIFIC HABITAT	Planktonic (Pelagic)										X										X	
	Euplanktonic						X															
	Tychoplanktonic															X						
	Periphytic (Aufwuchs)																					
	Epipelic																					
	Epilithic																					
	Epiphytic																					
	Other Periphytic								X													
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer																					
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other											v										

OSCILLATORIA TENUIS (Last of 3 profile sheets)

Louis et Olbrechts 1965 - 0-20°C, pH 4.8-5
Palmer 1970 - ranked as second most pollution tolerant *Oscillatoria* species.

		Bro 1965	L&O 1965	P&E 1965	Tur 1966	Mat 1966	Pet 1967	H&W 1967	Gol 1967	B&K 1968	P&M 1968	Cas 1969	Mat 1970	Jea 1971	Cap 1972	O&O 1972	S&E 1972	Mor 1974b	Elo 1974	N&H 1974	S&M 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkalipnilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)			X										X			X					
	beta range (weak)				X	a																
	Oligosaprobic				a																	α MESOSAPROBIC
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																			X		
	Mesotrophic																					EURYTROPHIC
	Oligotrophic																					
	Dystropnic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent																					
	Rheophilous																					LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																					
	Lentic: Lakes & Ponds	X				X			X													
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)											X										
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial			#									X									LAKES & PONDS,
	Estuarine																					± EURYECIOUS
	Littoral (Litoral)								X													
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)						X			X	X				X					X		
	Euplanktonic																					
	Tychoplanktonic																				X	
	Periphytic (Aufwuchs)															X						
	Epipelic																					PLANKTONIC
	Epilithic								X									X				(TYCHOPLANKTONIC)
	Epiphytic												XX									
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring							X											X			
	Summer		X					X		X												SUMMER
	Fall		X																			
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					THERMOPHILE
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

OSCILLATORIA TEREBRIFORMIS

		Col 1896	Til 1910	Cou 1915	B-P 1923	Gel 1932	Cop 1936	Gel 1942	Fie 1950	Des 1959	Ana 1961	Cla 1962a	Fie 1964	Fie 1965a	Cas 1967	Lez 1967	Cas 1968	Erg 1970	Dor 1974			CONSENSUS
pH	Acidobiontic																					
pH	Acidophilous																					
pH	Indifferent																					
pH	Alkaliphilous																					
pH	Alkaliobiontic																					
pH	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic												X	X								
SAPROBIAN	Mesosaprobic																					
SAPROBIAN	alpha range (strong)								X													
SAPROBIAN	beta range (weak)																					
SAPROBIAN	Oligosaprobic																					SAPROBIONTIC
SAPROBIAN	Saprophilic																					
SAPROBIAN	Saproxenous																					
SAPROBIAN	Katharobic or Saprophobic																					
SAPROBIAN	Unknown or other																					
NUTRIENT	Polytrophic																					
NUTRIENT	Eutrophic																					
NUTRIENT	Mesotrophic																					
NUTRIENT	Oligotrophic																					
NUTRIENT	Dystrophic																					
NUTRIENT	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
HALOBION	Mesohalobous																					
HALOBION	alpha range (strong)																					
HALOBION	beta range (weak)																					
HALOBION	Oligohalobous																					
HALOBION	Halophilous																					
HALOBION	Indifferent																					
HALOBION	Halophobous																					
HALOBION	Euryhalobous or Euryhaline																					
HALOBION	Unknown or other																					
CURRENT	Limnobiontic																					
CURRENT	Limnophilous									#												
CURRENT	Indifferent																					
CURRENT	Rheophilous																					LIMNOPHILOUS
CURRENT	Rheobiontic																					
CURRENT	Unknown or other																					
GENERAL HABITAT	Benthic												X	X					X			
GENERAL HABITAT	Lentic: Lakes & Ponds									X												
GENERAL HABITAT	Lentic: Bogs or Swamps																					
GENERAL HABITAT	Lotic: Crenophilous (general)																					
GENERAL HABITAT	Lotic: Crenophilous (thermal)			X	X	X	X	X		X				X		X						
GENERAL HABITAT	Lotic: Rivers & Streams																					
GENERAL HABITAT	Aerophilous or Terrestrial									X												CRENOPHILOUS (THERMAL)
GENERAL HABITAT	Estuarine																					
GENERAL HABITAT	Littoral (Litoral)																					
GENERAL HABITAT	Neritic																					
GENERAL HABITAT	Oceanic																					
GENERAL HABITAT	Eurytopic or Euryecious																					
GENERAL HABITAT	Unknown or other											?										
SPECIFIC HABITAT	Planktonic (Pelagic)																					
SPECIFIC HABITAT	Euplanktonic																					
SPECIFIC HABITAT	Tychoplanktonic																					
SPECIFIC HABITAT	Periphytic (Aufwuchs)																#					
SPECIFIC HABITAT	Epipelic																					EPILITHIC
SPECIFIC HABITAT	Epilithic	X	X																			
SPECIFIC HABITAT	Epiphytic																					
SPECIFIC HABITAT	Other Periphytic		X																			
SPECIFIC HABITAT	Unknown or other																					
SEASONS	Winter																					
SEASONS	Spring														X	X						
SEASONS	Summer																					SPRING, SUMMER, FALL
SEASONS	Fall														X	X						
TEMPERATURE	Euthermal																					
TEMPERATURE	Mesothermal																					
TEMPERATURE	Oligothermal																					
TEMPERATURE	Stenothermal																					EURYTHERMAL
TEMPERATURE	Metathermal																					
TEMPERATURE	Eurythermal									X	X											
TEMPERATURE	Unknown or other																					

Castenholz 1967 - optimum 50°C, upper limit 54°C, lower limit 30°C; will not tolerate freezing or drying.
Castenholz 1968 - 35-54°C

OSCILLATORIA TRICHOIDES

		GeI 1932	H-P 1938	CGK 1954	Des 1959	CGR 1961	Cla 1962b	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic							SAPROPHILIC
	Saprophilic			X				
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous			X				
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							MESOHALOBOUS
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline			?				
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous							
	Indifferent							RHEOPHILOUS
	Rheophilous				#			
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic							
	Lentic: Lakes & Ponds							
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)	Y		Y			Y	
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams							CRENOPHILOUS
	Aerophilous or Terrestrial							
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other						∞	
SPECIFIC HABITAT	Planktonic (Pelagic)							
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)							
	Epipelic							
	Epilithic							
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring			X				FALL
	Summer						X	
	Fall				X		X	
TEMPERATURE	Eutherma1							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

Koppe 1924 - in putrid waters
Mattern 1970 - "Faulschlamm"

PHORMIDIUM AMBIGUUM

		Col 1900	Lem 1907	Til 1910	Esm 1914	Str 1921	B-P 1923	Gel 1932	Mee 1954	Des 1959	Cla 1962a	Tam 1964	Pag 1967	Dor 1974	CONSENSUS
pH	Acidobiontic														
	Acidophilous										*				
	Indifferent														ACIDOPHILOUS (±)
	Alkaliphilous														
	Alkalibiontic														
	Unknown or other														
SAPROBIAN	Polysaprobic or Saprobiontic														
	Mesosaprobic														
	alpha range (strong)														
	beta range (weak)											X			
	Oligosaprobic														β MESOSAPROBIC
	Saprophilic														
	Saproxenous														
	Katharobic or Saprophobic														
	Unknown or other														
NUTRIENT	Polytrophic														
	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
	Unknown or other														
HALOBION	Euhalobous or Polyhalobous														
	Mesohalobous														
	alpha range (strong)														
	beta range (weak)														
	Oligohalobous														
	Halophilous														
	Indifferent														
	Halophobous														
	Euryhalobous or Euryhaline														
	Unknown or other														
CURRENT	Limnobiontic														
	Limnophilous														
	Indifferent							*			*				INDIFFERENT
	Rheophilous														
	Rheobiontic														
	Unknown or other														
GENERAL HABITAT	Benthic													X	
	Lentic: Lakes & Ponds														
	Lentic: Bogs or Swamps	H							X						
	Lotic: Crenophilous (general)			X											
	Lotic: Crenophilous (thermal)					X	X	X			X			X	
	Lotic: Rivers & Streams												X		
	Aerophilous or Terrestrial				X			X		X	X				CRENOPHILOUS, TERRESTRIAL
	Estuarine														
	Littoral (Litoral)														
	Neritic														
	Oceanic														
	Eurytopic or Euryecious														
	Unknown or other										⊠				
SPECIFIC HABITAT	Planktonic (Pelagic)			X						X					
	Euplanktonic														
	Tychoplanktonic														
	Periphytic (Aufwuchs)									X					PLANKTONIC, EPILITHIC, EPIPHYTIC
	Epipelic														
	Epilithic				X							X			
	Epiphytic				X							X			
	Other Periphytic														
	Unknown or other														
SEASONS	Winter														
	Spring														
	Summer														
	Fall														
TEMPERATURE	Eutherma1														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Unknown or other														

PHORMIDIUM ANGUSTISSIMUM

		Wes 1902	B-P 1923	Gei 1932	Gei 1942	Con 1942	Hdy 1949	Fie 1950	Mit 1951	Mee 1954	Des 1959	Ana 1961	Fie 1964	Fie 1965a	Kol 1967	WGS 1973	CONSENSUS
pH	Acidobiontic																
	Acidophilous																
	Indifferent																
	Alkaliphilous																
	Alkalibiontic																
	Unknown or other																
SAPROBIAN	Polysaprobic or Saprobiontic																
	Mesosaprobic																
	alpha range (strong)																
	beta range (weak)																
	Oligosaprobic						X	X									SAPROXENOUS
	Saprophilic																
	Saproxenous											X		X			
	Katharobic or Saprophobic																
	Unknown or other																
NUTRIENT	Polytrophic																
	Eutrophic																
	Mesotrophic																
	Oligotrophic																
	Dystrophic																
	Unknown or other																
HALOBION	Euhalobous or Polyhalobous																
	Mesohalobous																
	alpha range (strong)																
	beta range (weak)																
	Oligohalobous																
	Halophilous																
	Indifferent																
	Halophobous																
	Eurynalobous or Euryhaline																
	Unknown or other																
CURRENT	Limnobiontic																
	Limnophilous				W						W						
	Indifferent																LIMNOPHILOUS
	Rheophilous					W											
	Rheobiontic																
	Unknown or other																
GENERAL HABITAT	Benthic												X	X		X	
	Lentic: Lakes & Ponds																
	Lentic: Bogs or Swamps																
	Lotic: Crenophilous (general)																
	Lotic: Crenophilous (thermal)	X	W														
	Lotic: Rivers & Streams	X		X												X	RIVERS & STREAMS, BENTHIC
	Aerophilous or Terrestrial								X	X							
	Estuarine																
	Littoral (Litoral)																
	Neritic																
	Oceanic																
	Eurytopic or Euryecious																
	Unknown or other																
SPECIFIC HABITAT	Planktonic (Pelagic)									X							
	Euplanktonic																
	Tychoplanktonic																
	Periphytic (Aufwuchs)																
	Epipelic																EPILITHIC
	Epilithic			X	X										X		
	Epipnytic										X						
	Other Periphytic																
	Unknown or other																
SEASONS	Winter																
	Spring																
	Summer																
	Fall																
TEMPERATURE	Euthermal																
	Mesothermal																
	Oligothermal																
	Stenothermal																THERMOPHILE
	Metathermal																
	Eurythermal																
	Unknown or other											X					

Anagnosidis 1961 - oligothiophil, "foul mud"

PHORMIDIUM AUTUMNALE (First of 2 profile sheets)

		K&M 1908	Ti 1910	B-P 1923	O-S 1931	Ge 1932	B-P 1935	Kol 1935	Weh 1942	Hay 1944	Jan 1945	Lun 1947	A&L 1948	Kol 1950	Lie 1951	Ser 1955	Sla 1955	Sla 1956	Mes 1956	Des 1959	Hor 1959	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic								X													
	Mesosaprobic																					
	alpha range (strong)	X			X			X	X	X				X	X		X	X			X	
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic												X									
	Unknown or other																					
NUTRIENT	Polytropnic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																		X			
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous															X						
	Indifferent			#											#							CONSENSUS ON FOLLOWING PAGE
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic														X							
	Lentic: Lakes & Ponds																			X		
	Lentic: Bogs or Swamps			X																		
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)			X																		
	Lotic: Rivers & Streams		X			a	a													X	X	
	Aerophilous or Terrestrial		X	X		X	X	X			X	X		X	X					X	X	
	Estuarine																					
	Littoral (Litoral)																			X		
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other					X																
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)					#														X		
	Epipelic																					
	Epilithic		X																			
	Epiphytic		X																			
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer																					
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Geitler 1932 - nitrophilous

PHORMIDIUM AUTUMNALE (Last of 2 profile sheets)

		Blu 1959	Fot 1959	Beh 1961	ZgM 1961	Lie 1962	Min 1963	Fje 1964	Bro 1965	Fje 1965a	Rou 1965	Gol 1967	Bac 1967	Bac 1968	B&K 1968	H&S 1969	B&S 1970	Mat 1970	P&S 1973	Dor 1974	Nol 1974	CONSENSUS
PH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																		#			
	Mesosaprobic																					
	alpha range (strong)		X		X	X													#			
	beta range (weak)				X																	
	Oligosaprobic				X																	α MESOSAPROBIC, SAPROPHILIC
	Saprophilic			X				X		X												
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytropnic																					
	Eutrophic																X					
	Mesotrophic																					
	Oligotrophic																					EUTROPHIC
	Dystropnic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					EURYHALOBOUS
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline		X																			
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous					X	#															
	Indifferent													X								
	Rheophilous	X				X													#			INDIFFERENT
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic							X		X										X		
	Lentic: Lakes & Ponds								X													
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																			X		
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial														X	X	X					TERRESTRIAL
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)													X								
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)												X	X								
	Epipelic																					EPILITHIC
	Epilithic										X	X										
	Epiphytic																X					
	Other Periphytic																X					
	Unknown or other																					
SEASONS	Winter																			X		
	Spring																					SUMMER
	Summer													X						X	X	
	Fall																			X	X	
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Behre 1961 - euryoxybiont
Whitford and Schumacher 1963 - optimum above 20°C

PHORMIDIUM FAVOSUM

		SeG 1903	Til 1910	Gel 1932	Gel 1942	Weh 1942	Jaa 1945	Fje 1950	Kol 1957	Fje 1958	Fot 1959	Tam 1959	Hor 1959	Des 1959	Meh 1961	Fje 1964	Fje 1965a	Sla 1966	Gol 1967	Mat 1970	WgS 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)							X														
	beta range (weak)							X	X		X				X			X				β MESOSAPROBIC, SAPROPHILIC
	Oligosaprobic																					
	Saprophilic															X	X					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																			X		
	Mesotrophic																					EUTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Eunalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				*																*	
	Indifferent		*																			LIMNOPHILOUS
	Rheophilous			*																		
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic															X	X	X				
	Lentic: Lakes & Ponds																					
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)															X			X			
	Lotic: Crenophilous (thermal)			X																		
	Lotic: Rivers & Streams	X	X																			BENTHIC, TERRESTRIAL, +EURYECIOUS
	Aerophilous or Terrestrial	X	X		X																	
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)										X			X								
	Epipelic																					EPILITHIC
	Epilithic			X	X			X					X							X		
	Epiphytic	X										X							X			
	Other Periphytic													X								
	Unknown or other																					
SEASONS	Winter					X																
	Spring													X								
	Summer																				X	ALL TIMES OF YEAR
	Fall													X								
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

PHORMIDIUM FONTICOLA

		Gei 1932	Fot 1959	CONSENSUS
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
	Unknown or other			
SAPROBIAN	Polysaprobic or Saprobiontic			
	Mesosaprobic			
	alpha range (strong)			
	beta range (weak)			
	Oligosaprobic		X	OLIGOSAPROBIC, KATHAROBIC
	Saprophilic			
	Saproxenous			
	Katharobic or Saprophobic		X	
	Unknown or other			
NUTRIENT	Polytrophic			
	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
	Unknown or other			
HALOBION	Euhalobous or Polyhalobous			
	Mesohalobous			
	alpha range (strong)			
	beta range (weak)			
	Oligohalobous			
	Halophilous			
	Indifferent			
	Halophobous			
	Euryhalobous or Eurynaline			
	Unknown or other			
CURRENT	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
	Unknown or other			
GENERAL HABITAT	Benthic			
	Lentic: Lakes & Ponds			
	Lentic: Bogs or Swamps			
	Lotic: Crenophilous (general)	X		
	Lotic: Crenophilous (thermal)			
	Lotic: Rivers & Streams	X		RIVERS & STREAMS, CRENOPHILOUS
	Aerophilous or Terrestrial			
	Estuarine			
	Littoral (Litoral)			
	Neritic			
	Oceanic			
	Eurytopic or Euryecious			
	Unknown or other			
SPECIFIC HABITAT	Planktonic (Pelagic)			
	Euplanktonic			
	Tychoplanktonic			
	Periphytic (Aufwuchs)			
	Epipelic			
	Epilithic			
	Epiphytic			
	Other Periphytic			
	Unknown or other			
SEASONS	Winter			
	Spring			
	Summer			
	Fall			
TEMPERATURE	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Unknown or other			

PHORMIDIUM FOVEOLARUM

		K&M 1908	Gel 1932	Wys 1949	Fie 1955	Mez 1955	Sla 1956	Kol 1957	Fie 1958	Fot 1959	Kan 1959	Hor 1959	Des 1959	Cia 1962a	Lie 1962	Fie 1964	Fie 1965a	B&K 1968	Dob 1969	Mat 1970	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic				X	X					X											
	Mesosaprobic																					
	alpha range (strong)	X		X	X	X	X	X		X	X	X			X							
	beta range (weak)										X											α MESOSAPROBIC, SAPROPHILIC
	Oligosaprobic										X											
	Saprophilic															X	X					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																			X		
	Mesotrophic																					EUTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent														X							INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic															X	X				X	
	Lentic: Lakes & Ponds																					
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams												X									
	Aerophilous or Terrestrial	X	X										X	X	X							TERRESTRIAL
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other													?					?			
SPECIFIC HABITAT	Planktonic (Pelagic)																	X				
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)								X													EPILITHIC, EPIPHYTIC
	Epipelic																					
	Epilithic		X																	X		
	Epiphytic											X								X		
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					FALL
	Summer																					
	Fall																	X				
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

PHORMIDIUM INCRUSTATUM

		Til 1910	Gel 1932	Des 1959	Hor 1959	Tam 1959	Biu 1959	Pre 1962	Min 1963	Fic 1964	Gol 1967	Mat 1970	CONSENSUS
PH	Acidobiontic												
	Acidophilous												
	Indifferent												
	Alkalipnilous												
	Alkalibiontic												
	Unknown or other												
SAPROBIAN	Polysaprobic or Saprobiontic												
	Mesosaprobic												
	alpha range (strong)												
	beta range (weak)												SAPROPHOBIC
	Oligosaprobic												
	Saprophilic												
	Saproxenous									X			
	Katharobic or Saprophobic												
	Unknown or other												
NUTRILIMT	Polytrophic												
	Eutrophic												
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
	Unknown or other												
HALOBION	Euhalobous or Polyhalobous												
	Mesohalobous												
	alpha range (strong)												
	beta range (weak)												
	Oligohalobous												
	Halophilous												
	Indifferent												
	Halophobous												
	Euryhalobous or Eurynaline												
	Unknown or other												
CURRENT	Limnobiontic												
	Limnophilous												
	Indifferent			#				X		X			RHEOPHILOUS
	Rheophilous												
	Rheobiontic												
	Unknown or other												
GENERAL HABITAT	Benthic										X		
	Lentic: Lakes & Ponds				X								
	Lentic: Bogs or Swamps												
	Lotic: Crenophilous (general)												
	Lotic: Crenophilous (thermal)												
	Lotic: Rivers & Streams		X						X				RIVERS & STREAMS
	Aerophilous or Terrestrial									e			
	Estuarine												
	Littoral (Litoral)												
	Neritic												
	Oceanic												
	Eurytopic or Euryecious												
	Unknown or other												
SPECIFIC HABITAT	Planktonic (Pelagic)												
	Euplanktonic												
	Tychoplanktonic												
	Periphytic (Aufwuchs)								X				EPILITHIC
	Epipelic												
	Epilithic				X		X					X	
	Epiphytic					#						X	
	Other Periphytic												
	Unknown or other												
SEASONS	Winter												
	Spring												
	Summer												
	Fall												
TEMPERATURE	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Unknown or other												

PHORMIDIUM INUNDATUM

		K&M 1908	Til 1910	Gel 1932	Kol 1935	Fie 1950	Lie 1951	Mee 1954	Sla 1955	Des 1959	For 1959	Lie 1962	Pre 1962	Fie 1964	Fie 1965a	Fie 1965b	Sla 1966	Mat 1970	Fie 1971	WgS 1973	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligosaprobic	X			X	X	X	X		X		X	X				X	X		X		OLIGOSAPROBIC, SAPROXENOUS
	Saprophilic																					
	Saproxenous													X	X							
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent			#			#					#										INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic													X	X		X				X	
	Lentic: Lakes & Ponds		X					X														
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																				X	
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial		X		X																	BENTHIC
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)							X														
	Euplanktonic																					
	Tychoplanktonic												X	X								
	Periphytic (Aufwuchs)										X										X	
	Epipelic												X									EPILITHIC
	Epilithic				X			X					X						X			
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer																					
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

PHORMIDIUM LAMINOSUM

		Til 1898	Sau 1901	SGG 1903	Til 1910	Ele 1914	Bri 1920	B-P 1923	Gei 1932	Des 1959	Ana 1961	Cla 1962b	Ele 1964	Rou 1965	Bro 1965	M&S 1967	Cas 1969	Dor 1974			CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				SAPROPHOBIC
	Saprophilic																				
	Saproxenous																				
	Katharobic or Saprophobic												X								
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystropnic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Eurynalobous or Eurynaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous									#		#									
	Indifferent																				
	Rheophilous																				LIMNOPHILOUS
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic												X				X				
	Lentic: Lakes & Ponds														X						
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)							X	X												
	Lotic: Crenophilous (thermal)	X	X		X	X		X	X		X			X		X	X				
	Lotic: Rivers & Streams																				
	Aerophilous or Terrestrial						X			#					X	X					CRENOPHILOUS (THERMAL)
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other											X									
SPECIFIC HABITAT	Planktonic (Pelagic)																				
	Euplanktonic																				
	Tychoplanktonic														#						
	Periphytic (Aufwuchs)																				
	Epipelic																				
	Epilithic		X	X					X			X									EPILITHIC
	Epiphytic																				
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal										X					X					
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				EUTHERMAL, EURYTHERMAL
	Metathermal																				
	Eurythermal										X					X					
	Unknown or other										X										

Boye-Petersen 1923 - 25-42°C
Palmer 1959 - 40-85°C
Mann and Schlichting 1967 - 46.1-67.1°C

PHORMIDIUM LURIDUM

Khoja and Whitton 1975 - combined N essential for growth

		Gib 1909	B-P 1923	Gei 1932	Des 1959	Ana 1961	Bro 1965	Bac 1968	HGS 1969	Dor 1974	CONSENSUS
pH	Acidobiontic										
	Acidophilous										
	Indifferent										
	Alkaliphilous										
	Alkalibiontic										
	Unknown or other										
SAPROBIAN	Polysaprobic or Saprobiontic										
	Mesosaprobic										
	alpha range (strong)							X			
	beta range (weak)										
	Oligosaprobic										
	Saprophilic							X			SAPROPHILIC
	Saproxenous										
	Katharobic or Saprophobic										
	Unknown or other										
NUTRIENT	Polytrophic										
	Eutrophic										
	Mesotrophic										
	Oligotrophic										
	Dystrophic										
	Unknown or other										
HALOBION	Euhalobous or Polyhalobous										
	Mesohalobous										
	alpha range (strong)										
	beta range (weak)										
	Oligohalobous										
	Halophilous										
	Indifferent										
	Halophobous										
	Euryhalobous or Eurynaline										
	Unknown or other										
CURRENT	Limnobiontic										
	Limnophilous			#	X	#					
	Indifferent										
	Rheophilous										LIMNOPHILOUS
	Rheobiontic										
	Unknown or other										
GENERAL HABITAT	Benthic										
	Lentic: Lakes & Ponds				X		X		X		
	Lentic: Bogs or Swamps				X						
	Lotic: Crenophilous (general)								X		
	Lotic: Crenophilous (thermal)	X	#	X		X					
	Lotic: Rivers & Streams										
	Aerophilous or Terrestrial				X			X			CRENOPHILOUS (THERMAL)
	Estuarine										
	Littoral (Litoral)										
	Neritic										
	Oceanic										
	Eurytopic or Euryecious										
	Unknown or other										
SPECIFIC HABITAT	Planktonic (Pelagic)										
	Euplanktonic										
	Tychoplanktonic										
	Periphytic (Aufwuchs)						X				
	Epipelic										PERIPHYTIC
	Epilithic										
	Epiphytic										
	Other Periphytic										
	Unknown or other										
SEASONS	Winter										
	Spring										
	Summer										
	Fall										
TEMPERATURE	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Unknown or other										

PHORMIDIUM MOLLE

		Gei 1932	Gei 1942	Hay 1944	Fie 1950	Mee 1954	Fie 1955	Mez 1955	Kol 1957	Des 1959	Ana 1961	Fie 1964	Cla 1965	Fie 1965a	WGS 1973	CONSENSUS
pH	Acidobiontic															
	Acidophilous															
	Indifferent															
	Alkaliphilous															
	Alkalibiontic															
	Unknown or other															
SAPROBIAN	Polysaprobic or Saprobiontic				X			X								
	Mesosaprobic															
	alpha range (strong)				X			X								
	beta range (weak)				X		X	X								MESOSAPROBIC,
	Oligosaprobic			X	X											SAPROPHILIC
	Saprophilic											X		X		
	Saproxenous															
	Katharobic or Saprophobic															
	Unknown or other															
NUTRIENT	Polytrophic															
	Eutrophic															
	Mesotrophic															
	Oligotrophic															
	Dystrophic															
	Unknown or other															
HALOBION	Euhalobous or Polyhalobous															
	Mesohalobous															
	alpha range (strong)															
	beta range (weak)															
	Oligohalobous															
	Halophilous															
	Indifferent															
	Halophobous															
	Euryhalobous or Euryhaline															
	Unknown or other															
CURRENT	Limnobiontic															
	Limnophilous	*	*								*					
	Indifferent															LIMNOPHILOUS
	Rheophilous															
	Rheobiontic															
	Unknown or other															
GENERAL HABITAT	Benthic											X		X		
	Lentic: Lakes & Ponds					X				X						
	Lentic: Bogs or Swamps															
	Lotic: Crenophilous (general)															
	Lotic: Crenophilous (thermal)															
	Lotic: Rivers & Streams															
	Aerophilous or Terrestrial	X	X							X				X		TERRESTRIAL
	Estuarine															
	Littoral (Litoral)									X						
	Neritic															
	Oceanic															
	Eurytopic or Euryecious															
	Unknown or other												oo			
SPECIFIC HABITAT	Planktonic (Pelagic)					X										
	Euplanktonic															
	Tychoplanktonic															
	Periphytic (Aufwuchs)	X														PERIPHYTIC
	Epipelic															
	Epilithic															
	Epiphytic															
	Other Periphytic															
	Unknown or other															
SEASONS	Winter															
	Spring															
	Summer															
	Fall															
TEMPERATURE	Euthermal															
	Mesothermal															
	Oligothermal															
	Stenothermal															THERMOPHILE,
	Metathermal															THERMOBIONT
	Eurythermal															
	Unknown or other										v					

PHORMIDIUM PAPYRACEUM

		SGG 1903	K&M 1908	Til 1910	Gel 1932	Kol 1935	Kol 1950	Fje 1950	Lic 1951	C&K 1954	Mee 1954	Des 1959	Ana 1961	Lje 1962	Alm 1963	Fle 1964	Fle 1965a	Bro 1965	WAS 1973	Dor 1974	CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic		X			X	X	X	X				X								OLIGOSAPROBIC, SAPROXENOUS
	Saprophilic																				
	Saproxenous														X	X					
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				EURYHALOBOUS
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline									X?											
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent				#							#				#					
	Rheophilous												#								INDIFFERENT
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds	X								X					X	X			X		
	Lentic: Bogs or Swamps																				
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)				X																
	Lotic: Rivers & Streams		X								X						X				
	Aerophilous or Terrestrial				X	A	A		X				X	X		X		X			TERRESTRIAL
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other				S																
SPECIFIC HABITAT	Planktonic (Pelagic)									X											
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)																				
	Epipelic																				EPILITHIC
	Epilithic		X																		
	Epiphytic																				
	Other Periphytic										X										
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				THERMOPHILE
	Metathermal																				
	Eurythermal																				
	Unknown or other											Y									

PHORMIDIUM RETZII

		SEC 1903	Ti 1910	Fri 1929	Gei 1932	Gei 1942	Fie 1950	Kol 1957	Hor 1959	Des 1959	Beh 1961	Pre 1962	Min 1963	Am 1963	Fie 1964	Bro 1965	Fie 1965a	Sla 1966	Gol 1967	Ben 1969	WGS 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																			#		
	Indifferent																					ACIDOPHILOUS
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)						X			X												
	beta range (weak)						X	X		X							X				β MESOSAPROBIC,
	Oligosaprobic																					SAPROXENOUS
	Saprophilic																					
	Saproxenous														X		X					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent		#		#						#											INDIFFERENT
	Rheophilous			#									X									
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic														X		X	X				
	Lentic: Lakes & Ponds		X							X		X				X						
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)		X		X							X										
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams		X	X	X											X						
	Aerophilous or Terrestrial									X				X		X						± EURYECIOUS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)									X		X										
	Epipelic																					EPILITHIC
	Epilithic		X		X				X	X				X					X			
	Epiphytic		X																			
	Other Periphytic	X																				
	Unknown or other																					
SEASONS	Winter																					
	Spring								X													SPRING, SUMMER,
	Summer																				X	FALL
	Fall																			X		
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

PHORMIDIUM SUBFUSCUM

		K&M 1908	Til 1910	B-P 1923	Gel 1932	Gel 1942	Kol 1950	Fie 1950	Sla 1955	Fot 1959	Des 1959	Pre 1962	Fie 1964	Bro 1965	Fie 1965a	Sla 1966	Gol 1967	W&S 1973	Dor 1974			CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)																					
	beta range (weak)	X						X	X	X	X					X						β MESOSAPROBIC
	Oligosaprobic																					SAPROXENOUS
	Saprophilic																					
	Saproxenous												X		X							
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Eurynaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous											#										
	Indifferent			#	#	#																INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic									X			X		X			X				
	Lentic: Lakes & Ponds													X								
	Lentic: Bogs or Swamps																					
	Lotic: Crenophilous (general)																	X				
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams		X																			
	Aerophilous or Terrestrial											X										BENTHIC
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																					
	Epipelic																					EPILITHIC
	Epilithic		X	X	a	X											X					
	Epiphytic																					
	Other Periphytic												X									
	Unknown or other																					
SEASONS	Winter																					
	Spring																					SUMMER
	Summer																	X				
	Fall																					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

PHORMIDIUM TENUE

Boye-Petersen 1923 - 26-50°C
Palmer 1959 - indicative of salt brine (industrial wastes)

		Lem 1907	Til 1910	Bri 1919	B-P 1923	Gei 1932	B-P 1935	Hay 1944	Mit 1951	Mee 1954	Мед 1955	Fie 1955	Tam 1959	Ana 1961	Cla 1962a	Fie 1964	Fie 1965a	Bro 1965	Rou 1965	WGS 1973	Dor 1974	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic										X	X										
	Mesosaprobic																					
	alpha range (strong)										X	X										
	beta range (weak)																					
	Oligosaprobic							X														SAPROPHILIC
	Saprophilic															X	X					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous				#										#							
	Indifferent																					
	Rheophilous																			#		LIMNOPHILOUS
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic		X	X									X			X	X			X		
	Lentic: Lakes & Ponds		X	X						X								X				
	Lentic: Bogs or Swamps		X																			
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)				X	X	X								X					X		
	Lotic: Rivers & Streams		X															X				
	Aerophilous or Terrestrial			X		#	G		X													± EURYECIOUS
	Estuarine																					
	Littoral (Litoral)																					
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other														∞							
SPECIFIC HABITAT	Planktonic (Pelagic)	X							X													
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)		X									X										
	Epipelic																					PERIPHYTIC
	Epilithic										X											
	Epiphytic																					
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer																					
	Fall																					
TEMPERATURE	Euthermal																	X				
	Mesothermal																					
	Oligothermal																					EUTHERMAL,
	Stenothermal																					THERMOPHILE,
	Metathermal																					THERMOBIONT
	Eurythermal																					
	Unknown or other												>									

PHORMIDIUM UNCINATUM

		SGC 1903	K&M 1908	Ti 1910	Gei 1932	Ko 1935	Gei 1942	Ko 1950	Fie 1950	Lie 1951	Sla 1955	Sla 1956	Des 1959	Hor 1959	Pre 1962	Lie 1962	Fie 1964	Fie 1965a	Kol 1967	Bac 1968	W&S 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic																					
	Mesosaprobic																					
	alpha range (strong)		X			X		X	X	X	X	X		X		X						α MESOSAPROBIC!, SAPROPHILIC
	beta range (weak)																					
	Oligosaprobic																					
	Saprophilic																X	X				
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic																					
	Mesotrophic																					
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous																					
	Indifferent				#		#			#						#						INDIFFERENT
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																X	X				
	Lentic: Lakes & Ponds			X																		
	Lentic: Bogs or Swamps												X									
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)				X					X												
	Lotic: Rivers & Streams			X											X						X	
	Aerophilous or Terrestrial	X		X			X			X			X									TERRESTRIAL
	Estuarine																					
	Littoral (Litoral)			X																		
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)																					
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)																			X		PERIPHYTIC
	Epipelic																					
	Epilithic			X																		
	Epiphytic													X								
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																					
	Spring																					
	Summer																				X	SUMMER, FALL
	Fall																				X	
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

PLECTONEMA GRACILLIMUM

		KGM 1908	Gel 1932	Kol 1935	Gon 1947	GEG 1949	Coc 1967	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkeliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic	X		XX				OLIGOSAPROBIC
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic							
	Lentic: Lakes & Ponds							
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)			X				CRENOPHILOUS, TERRESTRIAL
	Lotic: Rivers & Streams							
	Aerophilous or Terrestrial				X			
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)							
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)							
	Epipelic							EPILITHIC
	Epilithic		X			X		
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring							
	Summer							
	Fall							
TEMPERATURE	Eutherma.							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

PLECTONEMA NOSTOCORUM

		Fil 1910	B-P 1923	Gel 1932	Dro 1943	G&G 1949	S&P 1953	H&P 1958	Tam 1959	Sin 1961	Pre 1962	Fie 1964	Fie 1965a	Pea 1967	H&S 1969						CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPROBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				SAPROPHILIC
	Saprophilic											X	e.								
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other							I													
NUTRIENT	Polytrophic																				
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligohalobous																				
	Halophilous																				
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline																				
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous																				
	Indifferent																				
	Rheophilous																				
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic											X									
	Lentic: Lakes & Ponds				X						X	X									
	Lentic: Bogs or Swamps										X										
	Lotic: Crenophilous (general)																				
	Lotic: Crenophilous (thermal)	X	X	X																	
	Lotic: Rivers & Streams			a	X									X							
	Aerophilous or Terrestrial				X	X				X					X						EURYECIOUS
	Estuarine																				
	Littoral (Litoral)																				
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)																				
	Euplanktonic																				
	Tychoplanktonic																				
	Periphytic (Aufwuchs)						*														
	Epipelic																				EPIPHYTIC
	Epilithic	X																			
	Epiphytic			X					X		X										
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal		X																		
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				EUTHERMAL
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

Silva and Papenfuss 1953 - maximum resistance to NaCl is 1 o/o

PSEUDANABAENA CATENATA

		Mot 1944	Jaa 1945	Kol 1950	Mes 1951	Stu 1956	Hor 1959	Des 1959	Ana 1961	Cla 1962b	Fie 1964	Tam 1964	P&E 1965	Fie 1965a	Bac 1967	Tam 1967	Bac 1968	Mat 1970	Buc 1971	Sta 1971	Fri 1973	CONSENSUS
pH	Acidobiontic																					
pH	Acidophilous																					
pH	Indifferent																					
pH	Alkaliphilous																					
pH	Alkalibiontic																					
pH	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic										X			X								
SAPROBIAN	Mesosaprobic																					
SAPROBIAN	alpha range (strong)			X									X				X		X			
SAPROBIAN	beta range (weak)																		X			
SAPROBIAN	Oligosaprobic																					α MESOSAPROBIC,
SAPROBIAN	Saprophilic																X					SAPROBIONTIC
SAPROBIAN	Saproxenous																					
SAPROBIAN	Katharobic or Saprophobic																					
SAPROBIAN	Unknown or other																					
NUTRIENT	Polytrophic																					
NUTRIENT	Eutrophic	X																				
NUTRIENT	Mesotrophic																					
NUTRIENT	Oligotrophic																					EUTROPHIC
NUTRIENT	Dystrophic																					
NUTRIENT	Unknown or other																					
HALOBION	Euhalobous or Polyhalobous																					
HALOBION	Mesohalobous																					
HALOBION	alpha range (strong)																					
HALOBION	beta range (weak)																					
HALOBION	Oligohalobous																					
HALOBION	Halophilous																					
HALOBION	Indifferent																					
HALOBION	Halophobous																					
HALOBION	Euryhalobous or Euryneline																					
HALOBION	Unknown or other																					
CURRENT	Limnobiontic																					
CURRENT	Limnophilous																					
CURRENT	Indifferent																					
CURRENT	Rheophilous																					
CURRENT	Rheobiontic																					
CURRENT	Unknown or other																					
GENERAL HABITAT	Benthic				X	X					X	X		X								
GENERAL HABITAT	Lentic: Lakes & Ponds							X					X									
GENERAL HABITAT	Lentic: Bogs or Swamps									X												
GENERAL HABITAT	Lotic: Crenophilous (general)																					
GENERAL HABITAT	Lotic: Crenophilous (thermal)							X														
GENERAL HABITAT	Lotic: Rivers & Streams																					
GENERAL HABITAT	Aerophilous or Terrestrial																					BENTHIC
GENERAL HABITAT	Estuarine																					
GENERAL HABITAT	Littoral (Litoral)				X																	
GENERAL HABITAT	Neritic																					
GENERAL HABITAT	Oceanic																					
GENERAL HABITAT	Eurytopic or Euryecious																					
GENERAL HABITAT	Unknown or other									cd		ab										
SPECIFIC HABITAT	Planktonic (Pelagic)							X				X							X			
SPECIFIC HABITAT	Euplanktonic					X																
SPECIFIC HABITAT	Tychoplanktonic																					
SPECIFIC HABITAT	Periphytic (Aufwuchs)													X			X					
SPECIFIC HABITAT	Epipelic																					PLANKTONIC
SPECIFIC HABITAT	Epilithic		X																			
SPECIFIC HABITAT	Epiphytic					X											X	X				
SPECIFIC HABITAT	Other Periphytic																					
SPECIFIC HABITAT	Unknown or other																					
SEASONS	Winter																					
SEASONS	Spring														X	X						
SEASONS	Summer																					SUMMER, FALL
SEASONS	Fall														X	X			X		X	
TEMPERATURE	Euthermal																					
TEMPERATURE	Mesothermal																					
TEMPERATURE	Oligothermal																					
TEMPERATURE	Stenothermal																					
TEMPERATURE	Metathermal																					
TEMPERATURE	Eurythermal																					
TEMPERATURE	Unknown or other																					

Anagnostidis 1961 - oligothiophil
Backhaus 1968 - weak periodicity

PSEUDANABAENA GALEATA

		BOc 1949	Bac 1968	CONSENSUS
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
	Unknown or other			
SAPROBIAN	Polysaprobic or Saprobiontic			
	Mesosaprobic			
	alpha range (strong)		X	
	beta range (weak)			
	Oligosaprobic			SAPROPHILIC
	Saprophilic		X	
	Saproxenous			
	Katharobic or Saprophobic			
	Unknown or other	c		
NUTRIENT	Polytrophic			
	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
	Unknown or other			
HALOBION	Euhalobous or Polyhalobous			
	Mesohalobous			
	alpha range (strong)			
	beta range (weak)			
	Oligohalobous			
	Halophilous			
	Indifferent			
	Halophobous			
	Euryhalobous or Eurynaline			
	Unknown or other			
CURRENT	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
	Unknown or other			
GENERAL HABITAT	Benthic			
	Lentic: Lakes & Ponds			
	Lentic: Bogs or Swamps			
	Lotic: Crenophilous (general)			
	Lotic: Crenophilous (thermal)			
	Lotic: Rivers & Streams			
	Aerophilous or Terrestrial			
	Estuarine			
	Littoral (Litoral)			
	Neritic			
	Oceanic			
	Eurytopic or Euryecious			
	Unknown or other			
SPECIFIC HABITAT	Planktonic (Pelagic)			
	Euplanktonic			
	Tychoplanktonic			
	Periphytic (Aufwuchs)		X	
	Epipelic			PERIPHYTIC
	Epilithic			
	Epiphytic			
	Other Periphytic			
	Unknown or other			
SEASONS	Winter			
	Spring			
	Summer			
	Fall			
TEMPERATURE	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Unknown or other			

RHABDODERMA MINIMA

		Gei 1932	H-P 1938	Jar 1952	CONSENSUS
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
	Unknown or other				
SAPROBIAN	Polysaprobic or Saprobiontic				
	Mesosaprobic				
	alpha range (strong)				
	beta range (weak)				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Katharobic or Saprophobic				
	Unknown or other				
NUTRIENT	Polytrophic				
	Eutrophic			n	
	Mesotrophic				
	Oligotrophic				DYSEUTROPHIC
	Dystrophic				
	Unknown or other				
HALOBION	Euhalobous or Polyhalobous				
	Mesohalobous				
	alpha range (strong)				
	beta range (weak)				
	Oligohalobous				
	Halophilous				
	Indifferent				
	Halophobous				
	Euryhalobous or Euryhaline				
	Unknown or other				
CURRENT	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
	Unknown or other				
GENERAL HABITAT	Benthic				
	Lentic: Lakes & Ponds				
	Lentic: Bogs or Swamps				
	Lotic: Crenophilous (general)	X	X		
	Lotic: Crenophilous (thermal)				
	Lotic: Rivers & Streams				
	Aerophilous or Terrestrial				CRENOPHILOUS
	Estuarine				
	Littoral (Litoral)				
	Neritic				
	Oceanic				
	Eurytopic or Euryecious				
	Unknown or other				
SPECIFIC HABITAT	Planktonic (Pelagic)		X		
	Euplanktonic				
	Tychoplanktonic				
	Periphytic (Aufwuchs)				
	Epipelic				PLANKTONIC
	Epilithic				
	Epiphytic				
	Other Periphytic				
	Unknown or other				
SEASONS	Winter				
	Spring				
	Summer				
	Fall				
TEMPERATURE	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Unknown or other				

RHABDODERMA SIGMOIDEA

		Ger 1932	H-P 1938	Jar 1952	CONSENSUS
pH	Acidobiontic				
	Acidophilous				
	Indifferent				
	Alkaliphilous				
	Alkalibiontic				
	Unknown or other				
SAPROBIAN	Polysaprobic or Saprobiontic				
	Mesosaprobic				
	alpha range (strong)				
	beta range (weak)				
	Oligosaprobic				
	Saprophilic				
	Saproxenous				
	Katharobic or Saprophobic				
	Unknown or other				
NUTRIENT	Polytrophic				
	Eutrophic		X		
	Mesotrophic				
	Oligotrophic				EUTROPHIC
	Dystrophic				
	Unknown or other				
HALOBION	Euhalobous or Polyhalobous				
	Mesohalobous				
	alpha range (strong)				
	beta range (weak)				
	Oligohalobous				
	Halophilous				
	Indifferent				
	Halophobous				
	Euryhalobous or Euryhaline				
	Unknown or other				
CURRENT	Limnobiontic				
	Limnophilous				
	Indifferent				
	Rheophilous				
	Rheobiontic				
	Unknown or other				
GENERAL HABITAT	Benthic				
	Lentic: Lakes & Ponds	X	X		
	Lentic: Bogs or Swamps				
	Lotic: Crenophilous (general)				
	Lotic: Crenophilous (thermal)				
	Lotic: Rivers & Streams				
	Aerophilous or Terrestrial				LAKES & PONDS
	Estuarine				
	Littoral (Litoral)				
	Neritic				
	Oceanic				
	Eurytopic or Euryecious				
	Unknown or other				
SPECIFIC HABITAT	Planktonic (Pelagic)	X	X		
	Euplanktonic				
	Tychoplanktonic				
	Periphytic (Aufwuchs)				
	Epipelic				PLANKTONIC
	Epilithic				
	Epiphytic				
	Other Peripnytic				
	Unknown or other				
SEASONS	Winter				
	Spring				
	Summer				
	Fall				
TEMPERATURE	Euthermal				
	Mesothermal				
	Oligothermal				
	Stenothermal				
	Metathermal				
	Eurythermal				
	Unknown or other				

RIVULARIA RUFESCENS

		Gel 1932	Fie 1964	CONSENSUS
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
	Unknown or other			
SAPROBIAN	Polysaprobic or Saprobiontic			
	Mesosaprobic			
	alpha range (strong)			
	beta range (weak)			SAPROPHOBIC
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Katharobic or Saprophobic		X	
	Unknown or other			
NUTRIENT	Polytrophic			
	Eutrophic			
	Mesotrophic			
	Oligotrophic			
	Dystrophic			
	Unknown or other			
HALOBION	Euhalobous or Polyhalobous			
	Mesohalobous			
	alpha range (strong)			
	beta range (weak)			
	Oligohalobous			
	Halophilous			
	Indifferent			
	Halophobous			
	Euryhalobous or Euryhaline			
	Unknown or other			
CURRENT	Limnobiontic			
	Limnophilous			
	Indifferent	#		INDIFFERENT
	Rheophilous			
	Rheobiontic			
	Unknown or other			
GENERAL HABITAT	Benthic		X	
	Lentic: Lakes & Ponds			
	Lentic: Bogs or Swamps			
	Lotic: Crenophilous (general)			
	Lotic: Crenophilous (thermal)			
	Lotic: Rivers & Streams			BENTHIC
	Aerophilous or Terrestrial			
	Estuarine			
	Littoral (Litoral)			
	Neritic			
	Oceanic			
	Eurytopic or Euryecious			
	Unknown or other			
SPECIFIC HABITAT	Planktonic (Pelagic)			
	Euplanktonic			
	Tychoplanktonic			
	Periphytic (Aufwuchs)			EPILITHIC
	Epipelic			
	Epilithic	#		
	Epiphytic			
	Other Periphytic			
	Unknown or other			
SEASONS	Winter			
	Spring			
	Summer			
	Fall			
TEMPERATURE	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Unknown or other			

SCHIZOTHRIX CALCICOLA

		Til 1897	Til 1910	B-P 1923	Gel 1932	Gel 1942	Cla 1962a	F&W 1966	Sto 1967	Pez 1967	Cas 1967	Kha 1969	Pez 1969	W&S 1973	CONSENSUS
pH	Acidobiontic														
	Acidophilous														
	Indifferent														
	Alkaliphilous														
	Alkalibiontic														
	Unknown or other														
SAPROBIAN	Polysaprobic or Saprobiontic														Associated with Pollution
	Mesosaprobic														
	alpha range (strong)														
	beta range (weak)														
	Oligosaprobic														
	Saprophilic														
	Saproxenous														
	Katharobic or Saprophobic														
	Unknown or other												C		
NUTRIENT	Polytrophic														
	Eutrophic														
	Mesotrophic														
	Oligotrophic														
	Dystrophic														
	Unknown or other														
HALOBION	Euhalobous or Polyhalobous														
	Mesohalobous														
	alpha range (strong)														
	beta range (weak)														
	Oligohalobous														
	Halophilous														
	Indifferent														
	Halophobous														
	Euryhalobous or Euryhaline														
	Unknown or other														
CURRENT	Limnobiontic														
	Limnophilous														
	Indifferent														RHEOPHILOUS
	Rheophilous														
	Rheobiontic														
	Unknown or other														
GENERAL HABITAT	Benthic														
	Lentic: Lakes & Ponds										X				
	Lentic: Bogs or Swamps														
	Lotic: Crenophilous (general)														
	Lotic: Crenophilous (thermal)	X	X	X	X		X		X		X				CRENOPHILOUS (THERMAL)
	Lotic: Rivers & Streams									X					
	Aerophilous or Terrestrial														
	Estuarine														
	Littoral (Litoral)											X			
	Neritic														
	Oceanic														
	Eurytopic or Euryecious							d							
	Unknown or other	sd	sd				sd								
SPECIFIC HABITAT	Planktonic (Pelagic)														EPILITHIC
	Euplanktonic														
	Tychoplanktonic														
	Periphytic (Aufwuchs)														
	Epipelic														
	Epilithic		X	X	z	X	X				X		X		
	Epiphytic														
	Other Periphytic														
	Unknown or other														
SEASONS	Winter														FALL
	Spring														
	Summer														
	Fall												X		
TEMPERATURE	Eutherma1														
	Mesothermal														
	Oligothermal														
	Stenothermal														
	Metathermal														
	Eurythermal														
	Unknown or other														

Drouet 1968 - indicated that this the most hardy of all species of Oscillatoriaceae
Patrick *et al.* 1969 - tolerant to pollution

SCHIZOTHRIX FASCICULATA

		Pow 1903	Til 1910	Gei 1932	Gei 1942	Blu 1959	Fie 1964	Gol 1967	CONSENSUS
pH	Acidobiontic								
	Acidophilous								
	Indifferent								
	Alkaliphilous								
	Alkalibiontic								
	Unknown or other								
SAPROBIAN	Polysaprobic or Saprobiontic								
	Mesosaprobic								
	alpha range (strong)								
	beta range (weak)								
	Oligosaprobic								SAPROPHOBIC
	Saprophilic								
	Saproxenous								
	Katharobic or Saprophobic						X		
	Unknown or other								
NUTRIENT	Polytrophic								
	Eutrophic								
	Mesotrophic								
	Oligotrophic								
	Dystrophic								
	Unknown or other								
HALOBION	Euhalobous or Polyhalobous								
	Mesohalobous								
	alpha range (strong)								
	beta range (weak)								
	Oligohalobous								
	Halophilous								
	Indifferent								
	Halophobous								
	Eurynalobous or Euryhaline								
	Unknown or other								
CURRENT	Limnobiontic								
	Limnophilous								
	Indifferent								
	Rheophilous			*	X		*		RHEOPHILOUS
	Rheobiontic								
	Unknown or other								
GENERAL HABITAT	Benthic						X		
	Lentic: Lakes & Ponds		X	X	X			X	
	Lentic: Bogs or Swamps								
	Lotic: Crenophilous (general)								
	Lotic: Crenophilous (thermal)								
	Lotic: Rivers & Streams				X				LAKES & PONDS
	Aerophilous or Terrestrial								
	Estuarine								
	Littoral (Litoral)				*			X	
	Neritic								
	Oceanic								
	Eurytopic or Euryecious								
	Unknown or other								
SPECIFIC HABITAT	Planktonic (Pelagic)								
	Euplanktonic								
	Tychoplanktonic								
	Periphytic (Aufwuchs)						X		
	Epipelic	X	X						EPIPELIC
	Epilithic							X	
	Epiphytic								
	Other Periphytic								
	Unknown or other								
SEASONS	Winter								
	Spring								
	Summer								
	Fall								
TEMPERATURE	Euthermal								
	Mesothermal								
	Oligothermal								
	Stenothermal								
	Metathermal								
	Eurythermal								
	Unknown or other								

SCHIZOTHRIX LACUSTRIS

		S&G 1903	Til 1910	Gel 1932	Bis 1935	Gel 1942	Blu 1959	Fot 1959	Des 1959	Fie 1964	Gyl 1967	Mat 1970	Dor 1974	CONSENSUS
pH	Acidobiontic													
	Acidophilous													
	Indifferent													
	Alkaliphilous													
	Alkalibiontic													
	Unknown or other													
SAPROBIAN	Polysaprobic or Saprobiontic													
	Mesosaprobic													
	alpha range (strong)													
	beta range (weak)													
	Oligosaprobic													SAPROPHOBIC
	Saprophilic													
	Saproxenous													
	Katharobic or Saprophobic									X				
	Unknown or other													
NUTRIENT	Polytrophic													
	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
	Unknown or other													
HALOBION	Euhalobous or Polyhalobous													
	Mesohalobous													
	alpha range (strong)													
	beta range (weak)													
	Oligohalobous													
	Halophilous													
	Indifferent													
	Halophobous													
	Euryhalobous or Euryhaline													
	Unknown or other													
CURRENT	Limnobiontic													
	Limnophilous													
	Indifferent													
	Rheophilous													RHEOBIONTIC (?)
	Rheobiontic						X							
	Unknown or other													
GENERAL HABITAT	Benthic							X		X		X		
	Lentic: Lakes & Ponds	X	X	X		X			X		X			
	Lentic: Bogs or Swamps													
	Lotic: Crenophilous (general)											X		
	Lotic: Crenophilous (thermal)													
	Lotic: Rivers & Streams							X						
	Aerophilous or Terrestrial													LAKES & PONDS
	Estuarine													
	Littoral (Litoral)									O		O		
	Neritic													
	Oceanic													
	Eurytopic or Euryecious													
	Unknown or other													
SPECIFIC HABITAT	Planktonic (Pelagic)													
	Euplanktonic													
	Tychoplanktonic													
	Periphytic (Aufwuchs)						X		X					
	Epipelic		X											EPILITHIC
	Epilithic			X	X	X				X		X		
	Epiphytic													
	Other Periphytic													
	Unknown or other													
SEASONS	Winter													
	Spring													
	Summer													
	Fall													
TEMPERATURE	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Unknown or other													

SCHIZOTHRIX PULVINATA

		Bis 1924	Gel 1932	Des 1959	Blu 1959	Fie 1964	CONSENSUS
pH	Acidobiontic						
	Acidophilous						
	Indifferent						
	Alkaliphilous						
	Alkalibiontic						
	Unknown or other						
SAPROBIAN	Polysaprobic or Saprobiontic						
	Mesosaprobic						
	alpha range (strong)						
	beta range (weak)						
	Oligosaprobic						SAPROPHOBIC
	Saprophilic						
	Saproxenous						
	Katharobic or Saprophobic				X		
	Unknown or other						
NUTRIENT	Polytrophic						
	Eutrophic						
	Mesotrophic						
	Oligotrophic						
	Dystrophic						
	Unknown or other						
HALOBION	Euhalobous or Polyhalobous						
	Mesohalobous						
	alpha range (strong)						
	beta range (weak)						
	Oligohalobous						
	Halophilous						
	Indifferent						
	Halophobous						
	Euryhalobous or Euryhaline						
	Unknown or other						
CURRENT	Limnobiontic						
	Limnophilous						
	Indifferent		#				
	Rheophilous				X		INDIFFERENT
	Rheobiontic						
	Unknown or other						
GENERAL HABITAT	Benthic					X	
	Lentic: Lakes & Ponds	X		X			
	Lentic: Bogs or Swamps						
	Lotic: Crenophilous (general)						
	Lotic: Crenophilous (thermal)						
	Lotic: Rivers & Streams						
	Aerophilous or Terrestrial						LAKES & PONDS
	Estuarine						
	Littoral (Litoral)						
	Neritic						
	Oceanic						
	Eurytopic or Euryecious						
	Unknown or other						
SPECIFIC HABITAT	Planktonic (Pelagic)						
	Euplanktonic						
	Tychoplanktonic						
	Periphytic (Aufwuchs)				X		
	Epipelic						PERIPHYTIC
	Epilithic		X				
	Epiphytic						
	Other Periphytic		X				
	Unknown or other						
SEASONS	Winter						
	Spring						
	Summer						
	Fall						
TEMPERATURE	Euthermal						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
	Unknown or other						

SCOPULONEMA MINUS

Backhaus 1968 - moderately strong periodicity (maxima at various times of year)

		Gei 1932	Gei 1942	Gol 1967	Bac 1967	Bac 1968	Fri 1973	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic				X	R	X	TENDENCY TOWARD OLIGOSAPROBIC
	Saprophilic				X	X		
	Saproxenous							
	Katharobic or Saprophobic							
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous							
	Indifferent		#					
	Rheophilous			P				± INDIFFERENT
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic							
	Lentic: Lakes & Ponds	X						
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams	X						
	Aerophilous or Terrestrial							LAKES & PONDS, RIVERS & STREAMS
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)							
	Euplanktonic							
	Tychoplanktonic							
	Periphytic (Aufwuchs)							
	Epipelic				X			
	Epilithic	X	X	X		X		EPILITHIC
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring							
	Summer			X	X	a		SUMMER
	Fall			X		X		
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

SCYTONEMA CRUSTACEUM

		Til 1910	B-P 1923	Gei 1932	Bis 1934	Con 1942	Des 1959	Sin 1961	Alm 1963	Fie 1964	Coc 1967	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)											
	Oligosaprobic											SAPROPHOBIC
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic									X		
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Euryhaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous											
	Indifferent											
	Rheophilous											
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic									X		
	Lentic: Lakes & Ponds											
	Lentic: Bogs or Swamps											
	Lotic: Crenophilous (general)											
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams											
	Aerophilous or Terrestrial				X	#	X		X		#	TERRESTRIAL
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)											
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)											
	Epipelic											EPILITHIC
	Epilithic	X	X	#				X				
	Epiphytic											
	Other Periphytic											
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer											
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

SCYTONEMA OCELLATUM

		Gel 1932	Dro 1942	Dro 1943	Des 1959	Pal 1959	Sin 1961	Pre 1962	Koc 1967	Van	CONSENSUS
pH	Acidobiontic										
	Acidophilous					#		#			
	Indifferent										ACIDOPHILOUS
	Alkaliphilous										
	Alkalibiontic										
	Unknown or other										
SAPROBIAN	Polysaprobic or Saprobiontic										
	Mesosaprobic										
	alpha range (strong)										
	beta range (weak)										
	Oligosaprobic										
	Saprophilic										
	Saproxenous										
	Katharobic or Saprophobic										
	Unknown or other										
NUTRIENT	Polytrophic										
	Eutrophic										
	Mesotrophic										OLIGOTROPHIC OR
	Oligotrophic								#		DYSTROPHIC
	Dystrophic								#		
	Unknown or other										
HALOBION	Euhalobous or Polyhalobous										
	Mesohalobous										
	alpha range (strong)										
	beta range (weak)										
	Oligohalobous										
	Halophilous										
	Indifferent										
	Halophobous										
	Euryhalobous or Euryhaline										
	Unknown or other										
CURRENT	Limnobiontic										
	Limnophilous										
	Indifferent										
	Rheophilous										
	Rheobiontic										
	Unknown or other										
GENERAL HABITAT	Benthic										
	Lentic: Lakes & Ponds				X	X		X			
	Lentic: Bogs or Swamps					X		X			
	Lotic: Crenophilous (general)										
	Lotic: Crenophilous (thermal)										
	Lotic: Rivers & Streams				X						
	Aerophilous or Terrestrial	X	X	X	X				X		TERRESTRIAL
	Estuarine										
	Littoral (Litoral)										
	Neritic										
	Oceanic										
	Eurytopic or Euryecious										
	Unknown or other										
SPECIFIC HABITAT	Planktonic (Pelagic)										
	Euplanktonic										
	Tychoplanktonic										
	Periphytic (Aufwuchs)	X			X						
	Epipelic										EPILITHIC
	Epilithic	X	X	X	X		X		X		
	Epiphytic								X		
	Other Periphytic		X	X	X				X		
	Unknown or other										
SEASONS	Winter										
	Spring										
	Summer										
	Fall										
TEMPERATURE	Euthermal										
	Mesothermal										
	Oligothermal										
	Stenothermal										
	Metathermal										
	Eurythermal										
	Unknown or other										

SPIRULINA ALBIDA

		Gei 1932	Kol 1935	H-P 1938	Gei 1942	Sku 1948	CONSENSUS
pH	Acidobiontic						
	Acidophilous						
	Indifferent						
	Alkaliphilous						
	Alkalibiontic						
	Unknown or other						
SAPROBIAN	Polysaprobic or Saprobiontic						
	Mesosaprobic	X		X			
	alpha range (strong)		X				
	beta range (weak)		X				
	Oligosaprobic						MESOSAPROBIC
	Saprophilic						
	Saproxenous						
	Katharobic or Saprophobic						
	Unknown or other						
NUTRIENT	Polytrophic						
	Eutrophic	X		X			
	Mesotrophic						
	Oligotrophic						EUTROPHIC
	Dystrophic						
	Unknown or other						
HALOBION	Euhalobous or Polyhalobous						
	Mesohalobous						
	alpha range (strong)						
	beta range (weak)						
	Oligohalobous						
	Halophilous						
	Indifferent						
	Halophobous						
	Euryhalobous or Euryhaline						
	Unknown or other						
CURRENT	Limnobiontic						
	Limnophilous						
	Indifferent				#		
	Rheophilous						INDIFFERENT
	Rheobiontic						
	Unknown or other						
GENERAL HABITAT	Benthic	X		X			
	Lentic: Lakes & Ponds						
	Lentic: Bogs or Swamps						
	Lotic: Crenophilous (general)						
	Lotic: Crenophilous (thermal)						
	Lotic: Rivers & Streams	X					
	Aerophilous or Terrestrial						BENTHIC
	Estuarine						
	Littoral (Litoral)						
	Neritic						
	Oceanic						
	Eurytopic or Euryecious						
	Unknown or other						
SPECIFIC HABITAT	Planktonic (Pelagic)						
	Euplanktonic				X		
	Tychoplanktonic						
	Periphytic (Aufwuchs)						
	Epipelic						EUPLANKTONIC
	Epilithic						
	Epiphytic						
	Other Periphyt[illegible]						
	Unknown or othe[illegible]			@			
SEASONS	Winter						
	Spring						
	Summer						
	Fall						
TEMPERATURE	Eutherma[illegible]						
	Mesothermal						
	Oligothermal						
	Stenothermal						
	Metathermal						
	Eurythermal						
	Unknown or other						

Huber-Pestalozzi 1938 - heterotrophic
Geitler 1942 - heterotrophic

SPIRULINA JENNERI

		K&M 1908	Pro 1928	Gel 1932	Kol 1935	Il-P 1938	Mes 1949	Fie 1950	Gil 1950	Kol 1950	Lie 1951	Wel 1951	Sla 1955	Sla 1956	Fot 1959	Des 1959	Lie 1962	Fie 1965a	S&K 1967	Mos 1969	W&S 1973	CONSENSUS
pH	Acidobiontic																					
	Acidophilous																					
	Indifferent																					
	Alkaliphilous																					
	Alkalibiontic																					
	Unknown or other																					
SAPROBIAN	Polysaprobic or Saprobiontic	?			X				X		X		X	X	X		X	X				
	Mesosaprobic									X												
	alpha range (strong)	X			X			X			X	X										
	beta range (weak)																					POLYSAPROBIC OR SAPROBIONTIC
	Oligosaprobic																					
	Saprophilic																					
	Saproxenous																					
	Katharobic or Saprophobic																					
	Unknown or other																					
NUTRIENT	Polytrophic																					
	Eutrophic						X												X			
	Mesotrophic																					EUTROPHIC
	Oligotrophic																					
	Dystrophic																					
	Unknown or other																					
HALIBIUM	Euhalobous or Polyhalobous																					
	Mesohalobous																					
	alpha range (strong)																					
	beta range (weak)																					
	Oligohalobous																					
	Halophilous																					
	Indifferent																					
	Halophobous																					
	Euryhalobous or Euryhaline																					
	Unknown or other																					
CURRENT	Limnobiontic																					
	Limnophilous			=		=											=					
	Indifferent																					LIMNOPHILOUS
	Rheophilous																					
	Rheobiontic																					
	Unknown or other																					
GENERAL HABITAT	Benthic																	X				
	Lentic: Lakes & Ponds															X					X	
	Lentic: Bogs or Swamps																X					
	Lotic: Crenophilous (general)																					
	Lotic: Crenophilous (thermal)																					
	Lotic: Rivers & Streams																					
	Aerophilous or Terrestrial																					LAKES & PONDS
	Estuarine																					
	Littoral (Litoral)		X																			
	Neritic																					
	Oceanic																					
	Eurytopic or Euryecious																					
	Unknown or other																					
SPECIFIC HABITAT	Planktonic (Pelagic)			=																		
	Euplanktonic																					
	Tychoplanktonic																					
	Periphytic (Aufwuchs)			X																		
	Epipelic																			X		EPIPHYTIC
	Epilithic																					
	Epiphytic			X		X																
	Other Periphytic																					
	Unknown or other																					
SEASONS	Winter																X					
	Spring																X					ALL TIMES OF YEAR
	Summer																X					
	Fall																X					
TEMPERATURE	Euthermal																					
	Mesothermal																					
	Oligothermal																					
	Stenothermal																					
	Metathermal																					
	Eurythermal																					
	Unknown or other																					

Liebmann 1962 - facultative anaerob

SPIRULINA PLATENSIS

		Gho 1925	Gei 1923	H-P 1938	Gei 1942	Lie 1951	Gak 1954	Mee 1954	Hol 1955	Des 1959	Sin 1961	Lie 1962	Wel 1965	CONSENSUS
pH	Acidobiontic													
	Acidophilous													
	Indifferent													
	Alkaliphilous			*									*	ALKALIPHILOUS
	Alkalibiontic													
	Unknown or other													
SAPROBIAN	Polysaprobic or Saprobiontic													
	Mesosaprobic													
	alpha range (strong)													
	beta range (weak)					X					X			β MESOSAPROBIC, SAPROPHILIC
	Oligosaprobic													
	Saprophilic						X							
	Saproxenous													
	Katharobic or Saprophobic													
	Unknown or other													
NUTRIENT	Polytrophic													
	Eutrophic													
	Mesotrophic													
	Oligotrophic													
	Dystrophic													
	Unknown or other													
HALOBION	Euhalobous or Polyhalobous													
	Mesohalobous						?							
	alpha range (strong)													
	beta range (weak)						X							
	Oligohalobous						X							EURYHALOBOUS
	Halophilous													
	Indifferent													
	Halophobous													
	Euryhalobous or Eurynaline													
	Unknown or other													
CURRENT	Limnobiontic													
	Limnophilous	*	*	*	*					*		*	*	
	Indifferent													
	Rheophilous													LIMNOPHILOUS
	Rheobiontic													
	Unknown or other													
GENERAL HABITAT	Benthic													
	Lentic: Lakes & Ponds						X	X		X			X	
	Lentic: Bogs or Swamps													
	Lotic: Crenophilous (general)			X									X	
	Lotic: Crenophilous (thermal)													
	Lotic: Rivers & Streams													
	Aerophilous or Terrestrial													LAKES & PONDS
	Estuarine													
	Littoral (Litoral)													
	Neritic													
	Oceanic													
	Eurytopic or Euryecious													
	Unknown or other													
SPECIFIC HABITAT	Planktonic (Pelagic)							X	X			X		
	Euplanktonic													
	Tychoplanktonic													
	Periphytic (Aufwuchs)											X		
	Epipelic													PLANKTONIC
	Epilithic													
	Epipnytic													
	Other Periphytic													
	Unknown or other					b					b		b	
SEASONS	Winter						X							
	Spring						X							
	Summer											X		ALL TIMES OF YEAR
	Fall						X							
TEMPERATURE	Euthermal													
	Mesothermal													
	Oligothermal													
	Stenothermal													
	Metathermal													
	Eurythermal													
	Unknown or other													

Conrad et Kufferath 1954 - thiophile

SPIRULINA SUBSALSA

		Til 1910	Gej 1925	Gei 1932	H&F 1932	Dix 1936	H-P 1938	Gon 1947	Sku 1948	C&K 1954	Des 1959	Pal 1959	Pre 1962	Kha 1969	Geg 1972	Nor 1972	W&S 1973				CONSENSUS
pH	Acidobiontic																				
	Acidophilous																				
	Indifferent																				
	Alkaliphilous																				
	Alkalibiontic																				
	Unknown or other																				
SAPHOBIAN	Polysaprobic or Saprobiontic																				
	Mesosaprobic																				
	alpha range (strong)																				
	beta range (weak)																				
	Oligosaprobic																				"INDICATES MARINE-
	Saprophilic																				ESTUARINE POLLUTION"
	Saproxenous																				
	Katharobic or Saprophobic																				
	Unknown or other																				
NUTRIENT	Polytrophic											X									
	Eutrophic																				
	Mesotrophic																				
	Oligotrophic																				
	Dystrophic																				
	Unknown or other																				
HALOBION	Euhalobous or Polyhalobous																				
	Mesohalobous																				
	alpha range (strong)																				
	beta range (weak)									X											
	Oligohalobous																				
	Halophilous				X					X											EURYHALOBOUS
	Indifferent																				
	Halophobous																				
	Euryhalobous or Euryhaline						X			X											
	Unknown or other																				
CURRENT	Limnobiontic																				
	Limnophilous			#							#										
	Indifferent																				
	Rheophilous																				LIMNOPHILOUS
	Rheobiontic																				
	Unknown or other																				
GENERAL HABITAT	Benthic																				
	Lentic: Lakes & Ponds										X			X	X		X				
	Lentic: Bogs or Swamps		X	X			X														
	Lotic: Crenophilous (general)	X																			
	Lotic: Crenophilous (thermal)			X			X	X		X	X										
	Lotic: Rivers & Streams	X																			
	Aerophilous or Terrestrial										X						X				± EURYECIOUS
	Estuarine																				
	Littoral (Litoral)					X			X		X					O					
	Neritic																				
	Oceanic																				
	Eurytopic or Euryecious																				
	Unknown or other																				
SPECIFIC HABITAT	Planktonic (Pelagic)														X						
	Euplanktonic																				
	Tychoplanktonic												X								
	Periphytic (Aufwuchs)								X												
	Epipelic																				EPILITHIC
	Epilithic	X												X							
	Epiphytic										X										
	Other Periphytic																				
	Unknown or other																				
SEASONS	Winter																				
	Spring																				
	Summer																				
	Fall																				
TEMPERATURE	Euthermal																				
	Mesothermal																				
	Oligothermal																				
	Stenothermal																				
	Metathermal																				
	Eurythermal																				
	Unknown or other																				

STIGONEMA INFORME

		Wol 1887	Ti 1910	B-P 1923	Gel 1932	Dro 1939	Gel 1942	Sin 1961	Fie 1964	Gol 1967	WGS 1973	CONSENSUS
pH	Acidobiontic											
	Acidophilous											
	Indifferent											
	Alkaliphilous											
	Alkalibiontic											
	Unknown or other											
SAPROBIAN	Polysaprobic or Saprobiontic											
	Mesosaprobic											
	alpha range (strong)											
	beta range (weak)											
	Oligosaprobic											SAPROPHOBIC
	Saprophilic											
	Saproxenous											
	Katharobic or Saprophobic								X			
	Unknown or other											
NUTRIENT	Polytrophic											
	Eutrophic											
	Mesotrophic											
	Oligotrophic											
	Dystrophic											
	Unknown or other											
HALOBION	Euhalobous or Polyhalobous											
	Mesohalobous											
	alpha range (strong)											
	beta range (weak)											
	Oligohalobous											
	Halophilous											
	Indifferent											
	Halophobous											
	Euryhalobous or Euryhaline											
	Unknown or other											
CURRENT	Limnobiontic											
	Limnophilous			X								
	Indifferent											
	Rheophilous											LIMNOPHILOUS
	Rheobiontic											
	Unknown or other											
GENERAL HABITAT	Benthic								X			
	Lentic: Lakes & Ponds		X	X								
	Lentic: Bogs or Swamps						X					
	Lotic: Crenophilous (general)											
	Lotic: Crenophilous (thermal)											
	Lotic: Rivers & Streams											
	Aerophilous or Terrestrial											LAKES & PONDS
	Estuarine											
	Littoral (Litoral)											
	Neritic											
	Oceanic											
	Eurytopic or Euryecious											
	Unknown or other											
SPECIFIC HABITAT	Planktonic (Pelagic)											
	Euplanktonic											
	Tychoplanktonic											
	Periphytic (Aufwuchs)											
	Epipelic											EPILITHIC
	Epilithic	X	X	X	X	X	X	X	X	X		
	Epiphytic						X					
	Other Periphytic		X	X								
	Unknown or other											
SEASONS	Winter											
	Spring											
	Summer											
	Fall											
TEMPERATURE	Euthermal											
	Mesothermal											
	Oligothermal											
	Stenothermal											
	Metathermal											
	Eurythermal											
	Unknown or other											

STIGONEMA MESENTERICUM

		Gei 1932	Des 1959	Pre 1962	Fie 1964	Wes 1973	Sch 1975	CONSENSUS
pH	Acidobiontic							
	Acidophilous							
	Indifferent							
	Alkaliphilous							
	Alkalibiontic							
	Unknown or other							
SAPROBIAN	Polysaprobic or Saprobiontic							
	Mesosaprobic							
	alpha range (strong)							
	beta range (weak)							
	Oligosaprobic							SAPROPHOBIC
	Saprophilic							
	Saproxenous							
	Katharobic or Saprophobic				X			
	Unknown or other							
NUTRIENT	Polytrophic							
	Eutrophic							
	Mesotrophic							
	Oligotrophic							
	Dystrophic							
	Unknown or other							
HALOBION	Euhalobous or Polyhalobous							
	Mesohalobous							
	alpha range (strong)							
	beta range (weak)							
	Oligohalobous							
	Halophilous							
	Indifferent							
	Halophobous							
	Euryhalobous or Euryhaline							
	Unknown or other							
CURRENT	Limnobiontic							
	Limnophilous							
	Indifferent							
	Rheophilous							
	Rheobiontic							
	Unknown or other							
GENERAL HABITAT	Benthic				X			
	Lentic: Lakes & Ponds			X				
	Lentic: Bogs or Swamps							
	Lotic: Crenophilous (general)							
	Lotic: Crenophilous (thermal)							
	Lotic: Rivers & Streams							
	Aerophilous or Terrestrial					e		LAKES & PONDS, SUBAERIAL, BENTHIC
	Estuarine							
	Littoral (Litoral)							
	Neritic							
	Oceanic							
	Eurytopic or Euryecious							
	Unknown or other							
SPECIFIC HABITAT	Planktonic (Pelagic)							
	Euplanktonic							
	Tychoplanktonic			X				
	Periphytic (Aufwuchs)							
	Epipelic							
	Epilithic	X	X		X			EPILITHIC
	Epiphytic							
	Other Periphytic							
	Unknown or other							
SEASONS	Winter							
	Spring							
	Summer				X			SUMMER
	Fall							
TEMPERATURE	Euthermal							
	Mesothermal							
	Oligothermal							
	Stenothermal							
	Metathermal							
	Eurythermal							
	Unknown or other							

SYMPLOCA ERECTA

		1958	1959	CONSENSUS
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkalipnilous			
	Alkalibiontic			
	Unknown or other			
SAPROBIAN	Polysaprobic or Saprobiontic			
	Mesosaprobic			
	alpha range (strong)			
	beta range (weak)			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Katharobic or Saprophobic			
	Unknown or other			
NUTRIENT	Polytropnic			
	Eutrophic			
	Mesotrophic			"INDICATES INDUSTRIAL COPPER POLLUTION"
	Oligotrophic			
	Dystropnic			
	Unknown or other		L	
HALOBION	Euhalobous or Polyhalobous			
	Mesohalobous			
	alpha range (strong)			
	beta range (weak)			
	Oligohalobous			
	Halophilous			
	Indifferent			
	Halophobous			
	Euryhalobous or Euryhaline			
	Unknown or other			
CURRENT	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
	Unknown or other			
GENERAL HABITAT	Benthic			
	Lentic: Lakes & Ponds			
	Lentic: Bogs or Swamps			
	Lotic: Crenophilous (general)			
	Lotic: Crenophilous (thermal)			
	Lotic: Rivers & Streams			
	Aerophilous or Terrestrial			"IN AN AQUARIUM"
	Estuarine			
	Littoral (Litoral)			
	Neritic			
	Oceanic			
	Eurytopic or Euryecious			
	Unknown or other	✓		
SPECIFIC HABITAT	Planktonic (Pelagic)			
	Euplanktonic			
	Tychoplanktonic			
	Periphytic (Aufwuchs)			
	Epipelic			
	Epilithic			
	Epiphytic			
	Other Periphytic			
	Unknown or other			
SEASONS	Winter			
	Spring			
	Summer			
	Fall			
TEMPERATURE	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Unknown or other			

SYMPLOCA MURALIS

		Col 1896	Til 1910	B-P 1923	Gei 1932	Gei 1942	Dro 1943	Dro 1960	Alm 1963	Fie 1964	Pea 1967	WGS 1973	CONSENSUS
pH	Acidobiontic												
	Acidophilous												
	Indifferent												
	Alkaliphilous												
	Alkalibiontic												
	Unknown or other												
SAPROBIAN	Polysaprobic or Saprobiontic												
	Mesosaprobic												
	alpha range (strong)												
	beta range (weak)												
	Oligosaprobic												SAPROPHOBIC
	Saprophilic												
	Saproxenous												
	Katharobic or Saprophobic								X				
	Unknown or other												
NUTRIENT	Polytrophic												
	Eutrophic												
	Mesotrophic												
	Oligotrophic												
	Dystrophic												
	Unknown or other												
HALOBION	Euhalobous or Polyhalobous												
	Mesohalobous												
	alpha range (strong)												
	beta range (weak)												
	Oligohalobous												
	Halophilous												
	Indifferent												
	Halophobous												
	Euryhalobous or Euryhaline												
	Unknown or other												
CURRENT	Limnobiontic												
	Limnophilous												
	Indifferent												
	Rheophilous												
	Rheobiontic												
	Unknown or other												
GENERAL HABITAT	Benthic								X				
	Lentic: Lakes & Ponds												
	Lentic: Bogs or Swamps												
	Lotic: Crenophilous (general)												
	Lotic: Crenophilous (thermal)			X									
	Lotic: Rivers & Streams									X			
	Aerophilous or Terrestrial	X	X		X	X	X		X			X	TERRESTRIAL
	Estuarine												
	Littoral (Litoral)												
	Neritic												
	Oceanic												
	Eurytopic or Euryecious												
	Unknown or other												
SPECIFIC HABITAT	Planktonic (Pelagic)												
	Euplanktonic												
	Tychoplanktonic												
	Periphytic (Aufwuchs)					X							
	Epipelic												EPILITHIC
	Epilithic				X			X					
	Epiphytic												
	Other Periphytic				X								
	Unknown or other												
SEASONS	Winter												
	Spring												
	Summer												
	Fall												
TEMPERATURE	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Unknown or other												

TETRARCUS ILSTERI

		Hi-P 1938	Gei 1942	CONSENSUS
pH	Acidobiontic			
	Acidophilous			
	Indifferent			
	Alkaliphilous			
	Alkalibiontic			
	Unknown or other			
SAPROBIAN	Polysaprobic or Saprobiontic			
	Mesosaprobic			
	alpha range (strong)			
	beta range (weak)			
	Oligosaprobic			
	Saprophilic			
	Saproxenous			
	Katharobic or Saprophobic			
	Unknown or other			
NUTRIENT	Polytrophic			
	Eutrophic			
	Mesotrophic			STRONGLY DYSTROPHIC
	Oligotrophic			
	Dystrophic	X		
	Unknown or other			
HALOBION	Euhalobous or Polyhalobous			
	Mesohalobous			
	alpha range (strong)			
	beta range (weak)			
	Oligohalobous			
	Halophilous			
	Indifferent			
	Halophobous			
	Euryhalobous or Eurynaline			
	Unknown or other			
CURRENT	Limnobiontic			
	Limnophilous			
	Indifferent			
	Rheophilous			
	Rheobiontic			
	Unknown or other			
GENERAL HABITAT	Benthic			
	Lentic: Lakes & Ponds		X	
	Lentic: Bogs or Swamps			
	Lotic: Crenophilous (general)			
	Lotic: Crenophilous (thermal)			
	Lotic: Rivers & Streams			LAKES & PONDS, LITTORAL
	Aerophilous or Terrestrial			
	Estuarine			
	Littoral (Litoral)		X	
	Neritic			
	Oceanic			
	Eurytopic or Euryecious			
	Unknown or other			
SPECIFIC HABITAT	Planktonic (Pelagic)		X	
	Euplanktonic			
	Tychoplanktonic			
	Periphytic (Aufwuchs)			PLANKTONIC
	Epipelic			
	Epilithic			
	Epiphytic			
	Other Periphytic			
	Unknown or other			
SEASONS	Winter			
	Spring			
	Summer			
	Fall			
TEMPERATURE	Euthermal			
	Mesothermal			
	Oligothermal			
	Stenothermal			
	Metathermal			
	Eurythermal			
	Unknown or other			

TOLYPOTHRIX LANATA

		SGG 1903	Til 1910	Cei 1932	I-P 1938	Hil 1959	Tam 1969	Pre 1962	Tam 1964	Mat 1970	WGK 1971	WGS 1973	CONSENSUS
pH	Acidobiontic												
	Acidophilous												
	Indifferent												
	Alkaliphilous												
	Alkalibiontic												
	Unknown or other												
SAPROBIAN	Polysaprobic or Saprobiontic												
	Mesosaprobic												
	alpha range (strong)												
	beta range (weak)												
	Oligosaprobic												
	Saprophilic												
	Saproxenous												
	Katharobic or Saprophobic												
	Unknown or other												
NUTRIENT	Polytrophic												
	Eutrophic												
	Mesotrophic												
	Oligotrophic								X	#			OLIGOTROPHIC
	Dystrophic												
	Unknown or other												
HALOBION	Euhalobous or Polyhalobous												
	Mesohalobous												
	alpha range (strong)												
	beta range (weak)												
	Oligohalobous												
	Halophilous												
	Indifferent												
	Halophobous												
	Euryhalobous or Euryhaline												
	Unknown or other												
CURRENT	Limnobiontic												
	Limnophilous			#									
	Indifferent												
	Rheophilous			O				#					LIMNOPHILOUS
	Rheobiontic												
	Unknown or other												
GENERAL HABITAT	Benthic				X								
	Lentic: Lakes & Ponds				X	X		X					
	Lentic: Bogs or Swamps												
	Lotic: Crenophilous (general)				X								
	Lotic: Crenophilous (thermal)												
	Lotic: Rivers & Streams	X			X								
	Aerophilous or Terrestrial												LAKES & PONDS
	Estuarine												
	Littoral (Litoral)								O				
	Neritic												
	Oceanic												
	Eurytopic or Euryecious												
	Unknown or other												
SPECIFIC HABITAT	Planktonic (Pelagic)			#		X							
	Euplanktonic												
	Tychoplanktonic												
	Periphytic (Aufwuchs)			#									
	Epipelic												EPILITHIC, EPIPHYTIC
	Epilithic	X			X				X				
	Epiphytic				X		X	X					
	Other Periphytic												
	Unknown or other												
SEASONS	Winter												
	Spring												
	Summer				X						X		SUMMER
	Fall				X								
TEMPERATURE	Euthermal												
	Mesothermal												
	Oligothermal												
	Stenothermal												
	Metathermal												
	Eurythermal												
	Unknown or other												

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